THE BUILDER

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ARCHITECTURE & THE BRITISH ARCHITECT

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THIS WEEK'S NEWS

SIXTY PER CENT. of French buildings destroyed in the war have now been rebuilt, states a correspondent, who adds that housing replacement is yet lagging. p. 444

A BRIEF DESCRIPTION of an experimental system of house construction now being carried out by the War Department at Maresfield, Sussex, is given on p. 457

THE MINISTRY OF EDUCATION will allow the basic limits of cost for primary schools and secondary schools to be raised by 4 per cent. by reason of the increased cost of building as shown by their index. p. 457

"THE BENEFITS of standardisation to a country faced with an output problem like Britain, are of crucial importance and are still a long way from being fully realised," said Mr. H. A. R. Binney, at the RSA on Wednesday. p. 459

THE VALUE of regional technical groups in disseminating the results of research was stressed by Sir Ben Lockspeiser at a conference on research held by the National Federation in London on Tuesday. p. 462

SPEAKING in London on March 11, Mr. David Eccles, Minister of Works, said he was sure that the views of the specialists should be heard by the Robertson Committee set up to promote measures to reduce costs and review contracting arrangements in the building industry. p. 465

"IN GOVERNMENTAL CIRCLES there is a degree of confidence on the question of brick supplies which is not supported by the experience of builders on the sites, where output is suffering," said Mr. Wilfred Horsfall, president, NFBTE, at Sheffield on March 11. p. 466

PRESERVATION PROBLEMS

NOW that the Gowers Report, as a result of the Government's recent decision, has become virtually a dead letter, some further thinking on the subject of the preservation of buildings of architectural and historic interest will have to be done. Mr. Osbert Lancaster offered some interesting and provocative views in the paper which he gave recently at the RIBA, some extracts from which were given in our last issue. He started off by laying it down that when a building has survived its original functional usefulness there are only three grounds on which we are logically entitled to press for its preservation: "Of its own intrinsic aesthetic merit, of *pietas*, of its scenic usefulness." The proposition is fair enough, and we were rather surprised to note that Mr. Lancaster himself failed to uphold the first condition, for later in his discourse he observed that once architecture "fulfils no function save the purely aesthetic, a virtue goes out of it and the sooner it becomes landscape, that is falls into ruin, the better." This is hardly tenable reasoning. If it were, we should have to reconcile ourselves to the loss of Santa Sophia, which, as Mr. Lancaster reminded us, now suffers from "a total suspension of function." Although the loss of function may be regretted, the preservation of a great work of architecture is surely to be commended.

On the subject of "redundant" country houses, too, it is difficult to go all the way with Mr. Lancaster, who would allow them to fall into ruin when they fail to comply with his conditions. Obviously it is best that these houses should be kept for their intended purpose, but to-day we are often faced with a choice of evils, that is, a choice between destruction and conversion to a different use. When the latter course is followed, it is often possible to preserve a good deal of the character of a building, particularly of its exterior, which may be its most valuable part; and, in any case, on economic grounds alone conversion is often preferable to destruction, and will be accepted by many with the philosophical reflection that half a loaf is better than no bread.

Mr. Lancaster was on surer ground when he came to his "one practical suggestion"—namely, that more attention should be given to the saving of facades that play a vital role in general effect. Here, again, however, he is not likely to escape the "cavilling from the purists who would condemn such practices as architectural falsehood and a betrayal of functional principles." We must be on our guard against the tendency of the past to frustrate present and future needs. Nash's Regent-street, for example, whose disappearance raised such an outcry in the early 'twenties, was hopelessly out of date for its purpose, and the loss of its stucco charm, though regrettable, was clearly unavoidable. What we should deplore is not so much the passing of an obsolete though delightful piece of street scenery, as the poor architectural quality of so much of the redevelopment. Often, however, a proposed demolition must be resolutely opposed, either because of the building's individual merit as architecture or because of its vital part in a landscape or architectural ensemble, and Mr. Lancaster aptly illustrated the point by citing Varley House, the handsome 18th-century building which makes such an admirable foil to the House of Lords, Crewe House, and Carlton House Terrace. The scenic value of such buildings is not often appreciated by the layman and is something which is difficult to prove though quickly enough realised when mischief has been done. In matters of aesthetics the layman does well to trust the trained eye.

Only too often, however, the preservation of some fine old building is simply a question of finance. The Government, though it should surely do more than it recently promised, obviously cannot find the enormous amount of money needed to save the great number of houses of architectural value now threatened with destruction, nor can the owners do so with

taxation at its present level. Nor is the National Trust able to shoulder the burden.

Paradoxically, these buildings are as much an asset as a liability, for they help to attract foreign visitors to our shores. Economic as well as cultural reasons, therefore, prompt us to preserve them in their integrity. Where that is impossible it is surely better to convert them to some useful purpose than allow them to fall into decay and end their days as mere ruinous features of the landscape.

PREFABRICATION AND PROPORTION

PROFESSOR WITTKOWER'S book on "Architectural Principles in the Age of Humanism" (reviewed elsewhere in this issue) deals learnedly with the attempts of the architects of the Italian Renaissance to establish in their designs an ideal system of proportion, and particularly with their obsession with the ratios of the musical scale. He ends a remarkable study by quoting Guadet: "Les proportions, c'est l'infini," and concludes, "this terse statement is still indicative of our approach. That is the reason why we view researches into the theory of proportion with suspicion and awe. But the subject is again very much alive in the minds of young architects to-day, and they may well evolve new and unexpected solutions to this ancient problem."

Contemporary interest in the subject is perhaps mainly due to the development of prefabrication, which hitherto has been concerned much less with aesthetics than with practicalities. In fact, it needs no more than a glance at some examples of prefabricated buildings to see that on occasion aesthetic considerations are completely ignored. Prefabrication is a rapidly growing industry which seems likely to develop a considerable export trade, and if our prestige is to be upheld it is of first importance that our products should be not only efficient and economical but of good design.

The increasing interest that architects are taking in the subject—witness the recent establishment of the Modular Society—is reassuring. If, as seems to be now generally agreed, to pursue an ideal system of proportion is to pursue a chimera, it is equally agreed that there is such a thing as good proportion, and no effort should be spared to establish it in prefabricated buildings.

NOTES & NEWS

THE RIBA RECEPTION

THE RIBA RECEPTION will be held on Friday, May 29, from 9 p.m. to 1 a.m. Tickets will be 15s. each. There will be an exhibition in the Library entitled "The Royal Patronage," and other attractions will be dancing in the Florence Hall, and a series of short film shows.

HONG KONG UNIVERSITY

MR. A. R. F. ANDERSON AND MR. ANTHONY CHITTY have been invited by the Council of the University of Hong Kong to visit the School of Architecture at Hong Kong this summer. Mr. Anderson has been appointed by the University as External Examiner in Architecture for a period of three years. Mr. Chitty is Chairman of the Board of Architectural Education and is visiting the School of Architecture in connection with the application which the University is making for recognition by the RIBA to Intermediate standard.

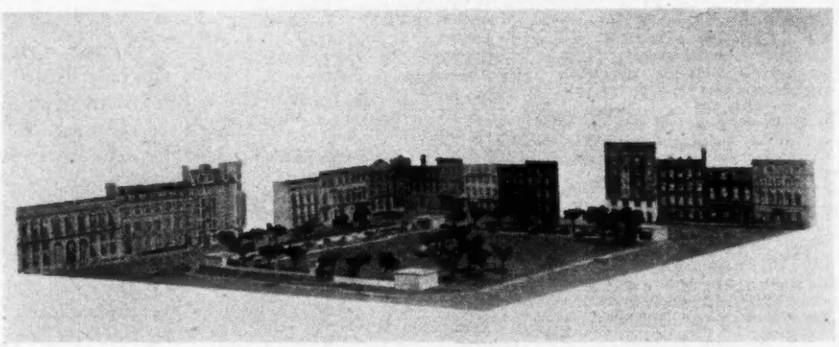
LE CORBUSIER AT THE AA

M. LE CORBUSIER will deliver an address, in French, to members and students of the Architectural Association at the dinner which is to be given in his honour at the AA on April 1.

A LE CORBUSIER BOOK

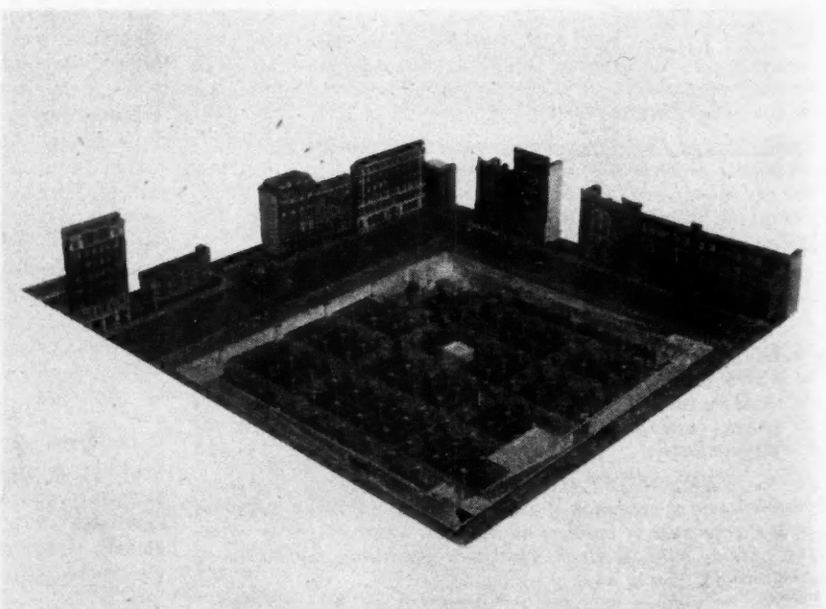
LE CORBUSIER, it is reported, has for long been aware of the growing demand for a revised system of measurement designed to meet the complexities of modern technology and capable of universal application. During the last 20 years he has evolved such a system, which is set forth in his new book, "The Modulor," which is announced for publication in the autumn by Faber and Faber.

An advance notice states that "The Modulor" does not claim to supersede the foot and inch, or the metre. Rather it is a reconciliation of the two, a measuring tool based upon the proportions of the human body and on mathematics. Essentially practical, it is intended as an architectural reference,



UNDERGROUND CAR PARK IN ST. JAMES'S SQUARE

How St. James's-square would look (above) if the scheme for an underground car park there to accommodate 700 cars were adopted and (below) details of construction. The scheme is part of a larger project for building a number of similar car parks below squares in Central London that has been put forward in a report of the Working Party set up by the Minister of Transport in May, 1951, to consider the recommendations of the London and Home Counties Traffic Advisory Committee. If the scheme here illustrated were adopted it would mean the felling of all the trees in St. James's-square. Some would be saved if an alternative scheme for 420 cars were adopted. Messrs. Grey Wornum and Partners are the architects.



always on hand, to be applied to the problems of proportion, design, prefabrication and mass production.

The central section of the book illustrates the practical applications of "The Modulor" to a factory at St. Die, the headquarters building of the UN in New York, the problems of typographical layout for a magazine, a travelling exhibition, and the architect's own office in the Rue de Sevres, and, above all, to Le Corbusier's major architectural realisation —the extensive *Unité d'Habitation* at Marseilles, built entirely to measurements furnished by the "Modulor."

NZ SCHOOL OF ARCHITECTURE

DETAILS of the courses available at the New Zealand School of Architecture are given in the school's prospectus for the current year. Examples of the work carried out last year are shown by a number of illustrations which would seem to indicate that the work might very well have been produced in a school of architecture in this country. Whether that is necessarily a matter for congratulation we will not say !

ABBEY CHURCH HOUSE, BATH

THE ABBEY CHURCH HOUSE, one of the oldest houses in Bath, was reopened by the Mayor of Bath, after a service of re-dedication by the Bishop of Bath and Wells, last month. The house, which was seriously damaged in the air raids on Bath in April, 1942, has been restored under the direction of Mr. F. W. Beresford Smith, ARIBA. Messrs. Hayward and Wooster, of Bath, were the builders for the work of restoration.

The house has a remarkable history going back to the Hospital for Lepers founded there in 1138 by Robert, Bishop of Bath. The present house was built about 1570 as a mansion for Edward Clarke, a member of an old Somerset family whose elaborately carved Arms over the fireplace of the Great Room form one of the most striking features of the building. Now, as a result of the work of restoration, the house stands almost exactly as it did when first built in the days of Queen Elizabeth I. It is to be used as a centre for Church activities. At the reopening the Archdeacon of Bath, the Ven. E. A. Cook, appealed for the gift of suitable period furniture and for financial help towards the heavy cost of restoration.

WHISTLER'S REACH REPRIEVED

SATISFACTION has been given by the LCC's decision to withdraw the proposal contained in the County of London Development Plan to build a new traffic artery at Chelsea across the bay round which Cheyne Walk now sweeps, immediately upstream from Battersea Bridge.

While it will be welcomed by all those who wish to see the distinctive character of this part of Chelsea preserved, the reason given for the decision by the LCC is attributed solely to restrictions on capital expenditure. Further, the LCC state that the development has only been excluded from the next five-year period of the plan, and the Council reserves the right to re-examine the proposal in the future, if the national economy permits the execution of an ambitious road-widening scheme at this point.

The proposed road and its new embankment, estimated to have cost £240,000, would have swept away the boat repair yard and the small boat anchorages and would also, its critics claimed, have destroyed the beauty of Whistler's Reach, one of the few remaining stretches of the Thames in inner London which retains its old character.

Investigation by the LCC's engineers has now disclosed that the river wall can be made safe by pressure-grouting at a cost of about £15,000.

KNOWSLEY HALL

WITH so many great houses falling into dilapidation it is good to hear news of one where the part of greatest architectural value is to be preserved. Lord Derby's decision to eliminate about one acre of the two-and-a-half acres of Knowsley Hall, the family home, will result in the disappearance of the architecturally inferior later additions from the main central portion, which was largely erected by the tenth earl at the beginning of the eighteenth century.

TWO IOB LECTURES

THE INSTITUTE OF BUILDERS has arranged two lectures on topics of professional interest to the industry. The first, which will be given on March 25, is entitled "Principles of Management" and will be presented by Mr. E. F. L. Brech. The other, "Contract Law as it Affects the Builder," by Mr. E. J. Rimmer, QC, will be given on May 27. Both lectures will be held at the Institute's premises at 48, Bedford-square, WC1, and admission is restricted to members.

TO LUNCH WITH LMBA

THE LORD MAYOR, Alderman Sir Rupert de la Bere, has accepted an invitation to luncheon with the Council of the LMBA in the Savoy Hotel on October 12 next. The President, Mr. Gerald Hill, will preside.

TIME-LIFE BUILDING

WE HAVE BEEN asked to state in connection with the Time-Life Building, which was illustrated in our issue of March 6 last, that the consulting engineers responsible for the foundations and retaining walls were Messrs. Andrews, Kent and Stone, MMConsE.

COID APPOINTMENTS

THE Board of Trade announce that Mr. W. J. Worboys, BSc, DPhil, has accepted the President's invitation to become chairman of the Council of Industrial Design in succession to Dr. R. S. Edwards, who retired on January 31. The present chairman of the Scottish Committee of the Council, Mr. R. A. Maclean, has accepted the President's invitation to remain in office for a further two years from February 1 last.

DEPUTY ARCHITECT, SWANSEA

APPLICATIONS are invited by March 31 for the post of Deputy Borough Architect to the County Borough of Swansea. Salary, £1,166 13s. 4d. per annum, rising by three annual increments to £1,333 6s. 8d. Details advertised elsewhere.

PROFESSIONAL ANNOUNCEMENTS

THE partnership of ARCON, chartered architects, has been dissolved. The late partners will practise separately at the following addresses : MR. RODNEY THOMAS, at 5, Seymour-walk, London, SW10 ; MR. A. M. GEAR at 81, Piccadilly, London, W1. Both Mr. Gear and Mr. Thomas will continue to act as consultants to the Arcon Group.

MR. GEORGE LAING, FIQS, AIAS, 17a, Newmarket-street, Hereford, has taken into partnership MR. E. F. YOUNG, ARICS, and the firm will in future be known as GEORGE LAING AND YOUNG. Mr. Young will operate from 10, Imperial-square, Cheltenham, and Mr. Laing will continue to operate from Hereford. They will be pleased to receive trade catalogues at both addresses.

COMING EVENTS

SATURDAY, MARCH 21

INSTITUTE OF QUANTITY SURVEYORS (MIDLAND BRANCH).—Film and lecture to be given by Mr. C. Park. White Horse Hotel, Congreve-street, Birmingham. 3 p.m.

SUNDAY, MARCH 22

SECTION AA THEATRE GROUP.—"The Flies," by Jean-Paul Sartre. New Boltons Theatre, 65, Draytongardens, SW10. 7.30 p.m. Also on March 23 and 24.

MONDAY, MARCH 23

CONFERENCE ON TROPICAL ARCHITECTURE.—Conference on architecture in tropical countries. University College, Gower-street, WC1. 10.15 a.m. Continuing until March 27.

NATIONAL FEDERATION OF DEMOLITION CONTRACTORS. —Luncheon and AGM. Holborn Restaurant. 1 p.m.

TUESDAY, MARCH 24

CHADWICK TRUST.—"Public Health Engineering : Research and Training," by Mr. H. R. Oakley, MSc (Eng), AMICE. University College, London, Gower-street, W1. 5.30 p.m.

WEDNESDAY, MARCH 25

LONDON SOCIETY.—"Westminster Abbey and the Coronation," by Mr. Lawrence E. Tanner. RSA, John Adam-street, Adelphi, WC2. 5.30 p.m.

LMBA (SOUTHERN AREA).—Lunch and general meeting. Cafe Royal, North End, Croydon. 1 p.m.

INSTITUTION OF SANITARY ENGINEERS (NW DISTRICT CENTRE).—"Sanitary Engineering Services for Pithead Baths," by Mr. John H. Walton. College of Technology Annexe, Sackville-street, Manchester. 3 p.m.

ROYAL SANITARY INSTITUTE.—"The Trend of Population and its Effect on Public Health," by Mr. Ivor J. Jones, and "Slum Clearance Problems of To-day," by Mr. F. A. Lodge, ARICS. Town Hall, Welshpool. 10.15 a.m.

THURSDAY, MARCH 26

TOWN AND COUNTRY PLANNING ASSOCIATION (STUDENT PLANNING GROUP).—"Physical Planning as an Aspect of Economic Policy," by Mr. M. P. Tester, MA. 28, King-street, WC2. 6.30 p.m.

INSTITUTION OF STRUCTURAL ENGINEERS.—"A Simple Theory of Suspension Bridges," by Professor A. G. Pugsley, OBE, FRS, DSc, AMICE. 11, Upper Belgrave-street, SW1. 5.55 p.m.

NORTHERN POLYTECHNIC.—Prize-giving and address to building trades apprentice students. Polytechnic, Holloway-road, N7. 7 p.m.

FRIDAY, MARCH 27

RIBA.—Mock Arbitration. 66, Portland-place, W1. 6 p.m. (Tickets from RIBA).

BIRMINGHAM AND FIVE COUNTIES AA.—"This and That," by Sir Hugh Casson, MA, FRIBA, RDI. Royal Birmingham Society of Artists' Galleries, New-street, Birmingham. 6 p.m.

SATURDAY, MARCH 28

INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS (MIDLAND SECTION).—Annual dinner. White Horse Restaurant, Congreve-street, Birmingham. 6 p.m.

FROM "THE BUILDER" OF 1853

Saturday, March 19, 1853

WESTMINSTER BRIDGE.—In the House of Commons the other evening, in reply to Sir D. L. Evans, Sir W. Molesworth admitted that Westminster Bridge was in a very ruinous and almost dangerous condition, and said that the present Government having been led to the conclusion that the determination of the late administration to pull down the existing bridge and to build a new one on nearly the same site was wise, he intended to proceed with the Bill, and that the new bridge would be wide, low, and at right angles with the present Houses of Parliament.

THE REBUILDING OF FRANCE

Some Recent Progress

By B. S. TOWNROE, OBE, MA, Hon.ARIBA

IN the Department of the Somme, where much of the fiercest fighting of the war took place following D-day, remarkable progress has been made in the replanning of destroyed towns and villages and in the actual carrying out of the plans. Altogether 60 per cent. of the buildings destroyed during the war have now been rebuilt. Particularly striking building developments have taken place in the City of Amiens, so well known to ex-Servicemen of both world wars.

The reconstruction of Amiens has taken place under the direction of the well-known French architect, M. Pierre Dufau. It was decided that, if possible, this city should give an example to the whole of France. It is, in fact, called a "pilot city," and the local council hope that the entire work of reconstruction will be completed at the latest by the year 1960. Although 24,000 houses were destroyed or badly damaged, it has been possible to rebuild and rehouse the homeless in flats, each containing a living-room, two or three bedrooms, and a kitchen with water laid on. This is a luxury which few of the working people of Amiens enjoyed before the war.

Two other towns well-known to ex-Servicemen are Abbeville and Doullens. Here the rebuilding has taken place in the typical style of the region of Picardy, and a good deal of care has wisely been taken to carry out the advice of the town planners.

GARDEN VILLAGES

At Beauvais by a miracle the Cathedral remained after the bombardment of 1940, but round it 5,100 houses were completely or partially destroyed. Garden villages have been erected around the town so as to provide more gardens for the inhabitants, but there has been some difficulty over carrying out the plan for rebuilding one of the worst of the destroyed areas. This has been nicknamed "The Snail," because building has proceeded so slowly, and 12 out of the 17 architects originally employed have lost their appointments.

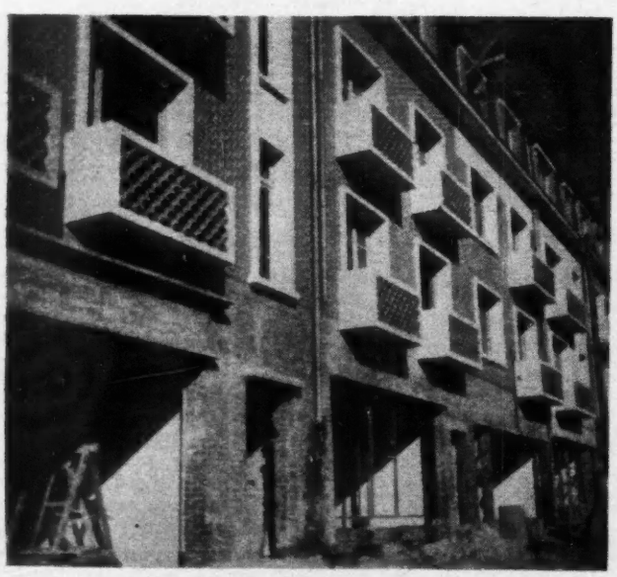
LOUVIERS: Redevelopment near the Cathedral.

In most towns in the North of France, in spite of endless financial difficulties, the report is on the whole encouraging. Many English people have landed or returned to England from the port of Boulogne, which was subjected to 487 bombardments between 1939 and 1944, during which over 11,000 dwellings were shattered. To-day a fifth of these dwellings have been rebuilt and are now occupied, and 1,344 are in course of rebuilding. There have, however, been many delays over the reconstruction of public buildings, partly due to disagreement over local town planning.

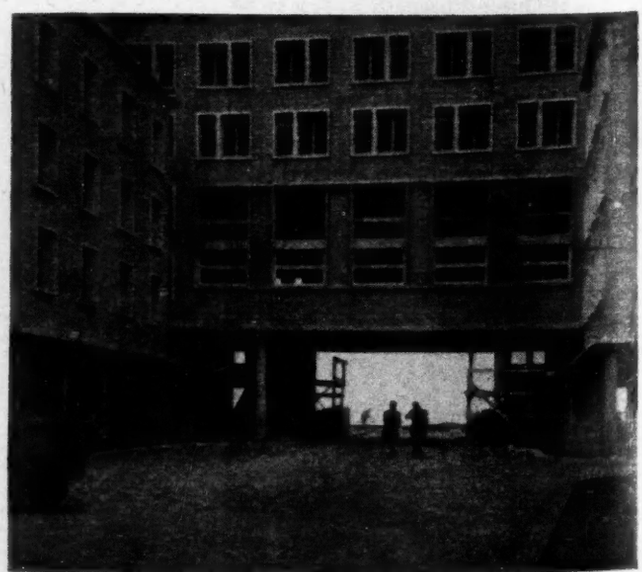
At Brest, where 7,500 out of 16,000 dwellings were destroyed, provision has been made for almost 30,000 new homes. Many of these are contained in flats of 12 storeys. In Brest there have been various changes in planning, much regretted by those who loved the old town, but which will make it far more accessible and easier for traffic.

At Caen, which almost became a dead town at the height of the bombing of the Liberation fighting, during which the University disappeared, many complex problems are having to be faced, and there is still a grave lack of houses. Lack of money has put a stop to many plans, and the inhabitants are restive and critical of the powers that be.

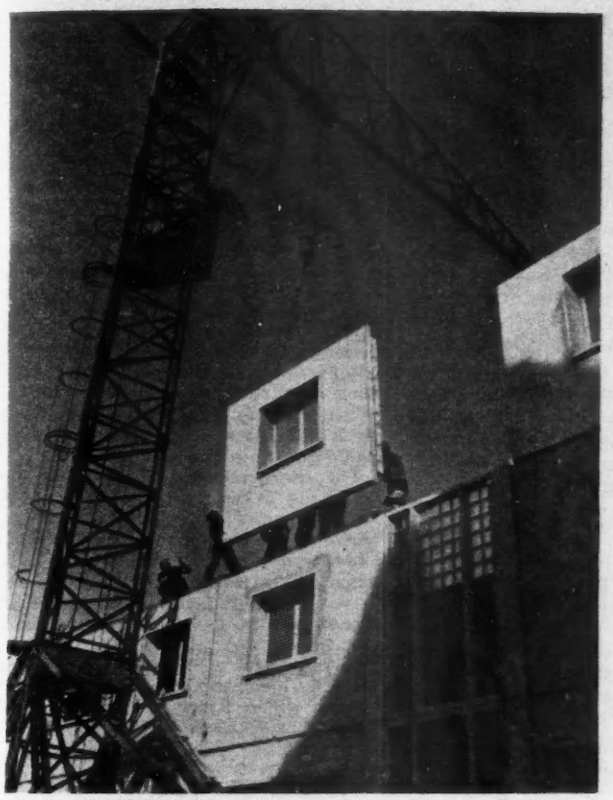
At Coutances, to the contrary, the results of reconstruction have on the whole been satisfactory with about 1,000 new homes provided for those who lost their houses. At Saint Lo, Valognes and



CALAIS: A modern block of flats near the quay.



DIEPPE: New hotel under construction.



Photos: United States Information.

LE HAVRE: Prefabricated flats on the Camus system. Left: A panel being lowered into position by a travelling crane. Except for the ground floor, erection advances at the rate of a storey a week. Right: A prefabricated flight of stairs being swung into position; this operation can be completed in three minutes.

Avranches, roughly half of the lost houses have been rebuilt.

Several times since the war I have visited the City of Le Havre where in 1944 the homes of 50,000 people were reduced to dust, not only in the centre by the dock but also in the suburbs. In 1946 the architect Augustin Perret was asked to plan a block of 350 flats on the square outside the bombed Town Hall. This is a striking building, modern in style, and at the same time suitable for a civic centre. There are to-day being built in and around Le Havre 1,972 dwellings by the Co-operative organisations, and 699 by the State, as well as 655 constructed with the help of war-damage compensation.

At Le Havre, a new method of prefabrication is being used. Known by the name of its inventor, the engineer Raymond Camus, it is said considerably to reduce construction time, an eight-storey block of flats, 360 ft. long and 30 ft. deep, taking eight months to erect. The building consists of a series of prefabricated panels. Operations both in the factory and on the building site have been greatly simplified and only some of them call for skilled labour.

LORIENT'S CAFES

Lorient, the second largest fishing port in France, lost 40 per cent. of its dwellings during the war, and the rebuilding of the fishing harbour is now practically completed. It is interesting to note that no fewer than 47 cafés have been provided along the quay within a distance of 300 yds. This supports the criticism sometimes made that France has far too many shops and cafés in proportion to the population, and this means a shortage of productive workers.

At Marseilles the Germans were largely responsible for the complete destruction of the filthy and insanitary slum quarter, which had an evil reputation for vice and disease. Le Corbusier designed some post-war buildings on which there is at present considerable controversy.

When I last visited Nantes, where 1,500 dwellings were completely destroyed and 120,000 damaged, I found a violent difference of opinion as to whether the plans of the Chief Architect, M. Roux-Spitz, should be carried out, or the town simply be rebuilt on the old lines. Generally speaking tradition has won the day and Nantes is being rebuilt in the same style and the same materials.

BUILDING AT ROUEN

I found a similar difference of opinion raging at Rouen, where many people would have liked to have kept open spaces around the beautiful Cathedral, while others wished to rebuild the com-

LE HAVRE: 700 separate panels went into the construction of this block of "Camus" flats, now nearly completed.

mercial centre. This delayed the work of reconstruction until 1949, when some of the ideas of the town planners were at last accepted. The industrial zone is being removed outside the town. Modern dwellings are being constructed at present along the River Seine. The quays are being built much higher to the consternation of many local inhabitants, who have christened this formidable rampart, nearly a mile long and about 20 ft. high, "The Wall." This is in the centre of the town.

At Royan, a French town which was very popular with older people living on their pensions, although 8,500 houses were destroyed, up to this year only about 30 per cent. have been rebuilt. This is a poor result of all the efforts made by the inhabitants, but the work has been slowed down for lack of money. Three years ago 1,600 workmen were employed, and this has decreased to about 350 to-day. Many of the former inhabitants still live in cellars and huts.

STRASBOURG

Many British architects and builders will remember the beauty of the ancient city of Strasbourg before the war. This contained many historical monuments many of which were destroyed. Effective rebuilding only started in 1948, and work at last began on an "experimental city" of 800 dwellings at the beginning of 1952. These were intended to provide homes for local residents who have had to accept temporary accommodation in a neighbouring German town of Kehl.

Generally it may be said that the French, in spite of their economic difficulties, and their shortage of manpower due to heavy losses in two world wars, are struggling with great resolution and industry to try and make up for their terrible war losses, but it must be admitted that many of this generation are not likely to live long enough to see the constructive work accomplished.

CORRESPONDENCE

NATIONAL WAGE INCENTIVE SCHEME

To the Editor of *The Builder*

SIR,—In his letter in your issue of March 13, "Cainite" fulfils my hope that my article of March 6 would provoke thought on the question of linking wages with production, and shows that the basic ideas put forward were understood. One exception is "Cainite's" contention that the article "tends to confirm the view that it is optimistic to expect a reduction in the cost of building to result from the addition of any sum to the normal wage rates." This was not the recommendation in my article, the proposed unit bonus in lieu of an addition to the hourly wage rate being a sum per *target* hour. This is very different from a plain addition to the time rates, for, as an example in my article showed, the equivalent earnings per working hour would vary *pro rata* to output. Whether such an experiment would result in a reduction in cost would be entirely dependent on its efficacy as an incentive to increased output. Although this type of incentive is new to the industry, experience up to the moment would lead one to expect that the resulting increase in output would exceed the bonus payments.

As regards "Cainite's" statement that the employment of National or Regional targets as the basis for the payment of bonus "would add further to the difficulties of price-building," the examples he gives of particular difficulties are surely a recital of the very problems with which any estimator is faced when tendering for work on which an incentive scheme is to be employed. To assume, as "Cainite" does, that the output targets of the scheme "must be identical with the constants of labour used by the estimator when price building," is bound to inflate costs.

As an example, assuming the estimated time for a job is 10 hours, and this is taken as a bonus target on which the men are paid half the savings as bonus, to earn 20 per cent. of their wages as bonus they will have to do the work in about seven hours, for which they will be paid 1½ hours in bonus. The total cost will then be 8½ hours. Strictly speaking, if competition is keen, the contractor would be compelled to anticipate the effect of a bonus scheme and include in his estimate only 8½ hours, which would then be quite inappropriate as a bonus target.

Other considerations, however, which have to be taken into account in tendering for building work are indirectly productive (non-bonus) time, labour oncosts, etc. In practice many estimators will base their tender price on their experience of the gross labour costs, including all these factors, and hence the resulting price, unless built-up meticulously for each item, will act merely as a check but not as a direct indication of the bonus man-hour targets.

The employment of the fixed unit bonuses would not affect these considerations where bonus schemes were already in operation. Where they were not the estimator would, of course, have to assume the increase in output which would result from their employment, as with other schemes. Where plus rates were already being paid no such problem would arise.

I am grateful to "Cainite" for the points raised by him, which have given me food for thought which I feel sure will be of help in future consideration of this subject.

R. H. JAMES.

7, Hobart-place, SW1.

"HIGH PADDINGTON"

To the Editor of *The Builder*

SIR,—Through the medium of Press articles, exhibitions of the model, broadcast talks and lectures, Mr. Sergei Kadleigh's "High Paddington" scheme is being systematically boosted into prominence by the high-pressure methods to which Le Corbusier's followers (and other members of the "High-Gang") are so lamentably addicted.

At his recent Royal Society of Arts lecture, Mr. Kadleigh, by some curious process of reasoning, assured us that schemes like "High Paddington" provide the sure-fire answer to the problem of providing Londoners with adequate defence against atomic bombing.

This is more likely to be achieved by a process of reversal into "Low Paddington," or should one say "Deep Paddington"—and the deeper the better.

ALEXANDER FURNESS.

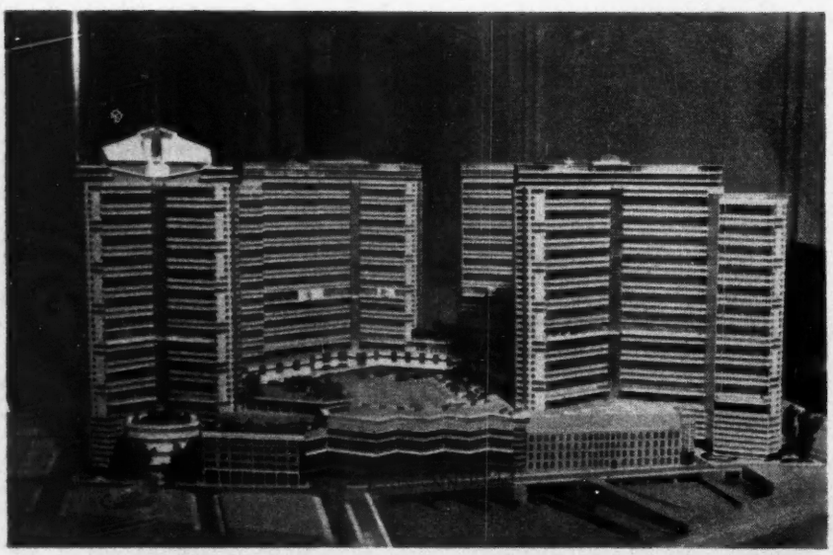
17, Dunraven-street, W1.

THE COST OF BUILDING

To the Editor of *The Builder*

SIR,—I ask for the courtesy of your columns to reply, as briefly as I can, to your correspondents who write under the title of "The Cost of Building." First, to Mr. Osman. As I am a director of the Holidays Scheme Management, Ltd., I am well aware of the arrangements made. These have been made under an agreement with the Building and the Civil Engineering Employers' Federations, and I assume, therefore, that if Mr. Osman has any complaint to lay against the administration of the scheme he would communicate with his appropriate organisation.

To Mr. Simmons. I am not "passing



HIGH PADDINGTON.—This model of the High Paddington scheme, which shows the entrance to the railway goods yard in the centre foreground, was used by Mr. Sergei Kadleigh, ARIBA, to illustrate his address on this subject given at the Royal Society of Arts on March 11. A summary of Mr. Kadleigh's remarks was published in our last issue.

any buck," but replying to criticisms and defending my members. The Final Report of the latest Census of Production on Building and Contracting gives a figure of £424 as the net output per person for 1948, compared with £199 for 1935. I cannot say how many bricks I laid per hour; the number would depend on the kind of work performed. What I can say is that my employers were satisfied with my work. Even if I could give the information I should not do so, for I am trying to keep the correspondence free from personality. If I wished to follow the example impertinently set me, I would ask Mr. Simmons what he does and whether his output is satisfactory.

To Mr. Harrington. I have lived long enough to regard newspaper reports with suspicion; a newspaper statement is not necessarily one of fact. If a lad received £8 to £10, I assume he earned it (obviously, I put "earned" in quotes because I extracted the word from Mr. Harrington's letter) by means of an output bonus, or by overtime, or both. I have never fixed any bonus rates; during the war this was done by the Ministry of Works.

To Mr. Hosken. Reared in poverty I had personal experience of the "good old days." If beer at 2d. a pint goes with the bread line and the soup kitchen I want none of it.

May I add a few general comments? What I strongly resent is the indiscriminate and generalised attack on all building operatives. A few here and there may not be pulling their weight, but that is possibly the position also with some scriveners and others. Output may not be quite at the pre-war rate, but the defect should not be attributed entirely to the operatives; there are numerous factors to be taken into consideration, as anyone knows who has any knowledge at all of the building industry. Building workers are tired of being made the butt of every tenth-rate comic and disgruntler.

R. COPPOCK,
General Secretary, NFBTO.
Federal House, Clapham, SW4.

To the Editor of *The Builder*

SIR,—Provided that you can plumb the depths of profundity when reading Mr. Hosken's letter (*The Builder* of March 6) you will find a viewpoint which, if nothing else, is certain to cause controversy. But the letter contains such an abundance of paradoxes that it is extremely difficult to ascertain whether Mr. Hosken is more concerned with going on record as an expert on our vocabulary, or with present-day building costs. Without further ado, however, I would say: Let there be an end to such dangerous diatribes. We get precisely nowhere by pointing the accusing finger at one particular section of the industry, nor are we likely to evoke any real response from operatives by insinuating that quality and output were higher during those years when the threat of unemployment made a man lose all vestige of pride and do anything to keep his job. Mr. Hosken's policy of "moral rearmament" should have been advocated then.

Quoting your correspondent we are told, "It is our duty to examine the problem dispassionately," and immediately Mr. Hosken, apparently unashamedly, dives head-first into a maze of moral and political bias which serves no more useful purpose than his suggestion that complete control by the management is the "be-all and end-all" of our economic difficulties. I do agree that the cost of labour is a fundamental, but it is not necessarily the criterion. But if we are to believe Mr. Hosken, we all may as well stop wasting our time in thinking-up methods by which to improve our production; cease trying to improve architect-contractor liaison; and write off all our building trade operatives as slackers, pilferers and persons "lacking abdominal fortitude," who do no more than contaminate the minds of those entering the profession.

"Everyone said: 'Get there early'!"

No, Mr. Hosken offers no real answer to the problem. Despite his remarks, the solution lies in improved methods of production, mechanisation, better liaison and the concerted efforts of us all, not just some of us, and those who carry out the manual tasks are entitled at times to a little material or verbal encouragement—a word which for all his eloquence does not appear to be known by Mr. Hosken.

Self-interest, to some degree, is unavoidable, and in fact necessary, and it is only "unsocial" when indulged in to excess. If this is not true, how does one acquire anything, even knowledge?

R. WILDE.
591, Chesterfield-road, Sheffield, 8.

To the Editor of *The Builder*

SIR,—As a non-technical member of the building industry who reads your newspaper weekly, I have been following with great interest the correspondence on the Cost of Building. What I have read leads me to believe that there will be little hope of securing improvement in the building machine until each section begins its plan by looking at itself and isolating its own shortcomings. When I meet the various sides of the industry and ask for views on reducing the cost of building I find almost invariably that I get from the architect excellent analyses of the shortcomings of builders; from the builder heartrending accounts of the failings of architects and sub-contractors; from the quantity surveyor only a discreet silence; and from leaders of the operatives (who, it seems, are universally held mainly responsible for low production) the plaintive cry that men can't be expected to lay as many bricks as pre-war if the bricks aren't there! And so the roundabout goes on, each figure blaming the others but seldom admitting that there is any room for self-improvement.

It is not my purpose to analyse the industry or to isolate what seems to the onlooker to be the shortcoming of each several part, even if I were competent so to do, but I should like to suggest to the Committee of Review over which Mr. Howard Robertson is to preside that it invites the member associations and any who may give evidence to examine the working of their own organisations as well as making suggestions for the overhaul of the general machinery of the industry. If there has, in short, been a tendency for each side to hide behind the failings of others, may I suggest that Mr. Robertson's committee might take as its motto the words "No Alibis"?

DALESMAN. (Card enclosed).

TOWER CRANES AND BUILDING

To the Editor of *The Builder*

SIR,—I was interested to note the huge saving purporting to be effected in house-building by the use of the Tower Crane, according to the report of the Norwich City Direct Labour Organisation. While appreciating that a substantial saving should be made, it would nevertheless be of considerable interest to house-builders to have greater details as to how the saving is arrived at.

It would be unfair to criticise the statement made in the absence of full knowledge, but superficially the figures would appear to be abnormally high, since the 1,000 man-hours saved are related to the shell of the house only, and are therefore presumably restricted to the handling of materials between damp-course level and roof, which would appear to confine the majority of the work to brickwork and joists.

Very simply, on the average type of Council house requiring, say, 16,000 bricks per house, which would be laid at a rate of no fewer than 50 bricks per man-hour, a total time of 320 bricklayer-hours, and approximately 192 labourer-hours, totalling 512 hours, would be involved, and allowing 18 hours sundry labours for handling windows and lintols, this results in a total of, say, 530 hours. Scaffolding would, of course, be excluded from the machine operation, and the figures set out above are intended to cover scaffolders' time. It will, therefore, be seen that the total number of man-hours in the erection of the shell of one house would be about 530, yet we are informed that a saving of 1,000 hours has taken place.

As pointed out above, the purpose of this letter is not to criticise in the absence of knowledge, but rather to draw a comparison, and hope that a full analysis will be offered, so that the advantages that may

be obtained from the use of this type of machinery may be available for those interested.

H. FORD,
Managing Director,
Rexford (Builders), Ltd.
Shirley, Birmingham.

THE KAMPALA COMPETITION

To the Editor of *The Builder*

SIR,—With reference to Mr. Lawrence Dale's letter on this subject in your issue of February 13, I would state that Mr. Dale must be very well aware the competition conforms in all respects with the requirements of the RIBA whose advice in framing the conditions was meticulously observed.

ALBERT E. SPENCER, for Secretary,
Uganda Electricity Board.
P.O. Box 559, Kampala, Uganda.

RECORDING CHURCH PRESERVATIONS

To the Editor of *The Builder*

SIR,—The whole question of records relating to church buildings has been a matter of active concern to my Council for many years. These documents are of various kinds, some ancient, some modern; here I confine myself to parish churches with regard to what might be called current records. Those which concern the present care of the church building, such as architects' reports, and information on recent work done to the building, should in future be recorded in a *church log book*, in which changes, repairs, reports and the like are to be noted. The proposal will be found described on page 88 of the recent report of the Church Assembly entitled, "The Preservation of Our Churches" (Church Information Board, 1952). This will bear fruit in time, but cannot be implemented until a measure dealing with the regular inspection of churches has passed the Assembly and received Royal Assent.

This Council has constantly urged parishes to keep all reports of architects and relative correspondence, and diocesan advisory committees to do the same. Matter no longer required at the present day should be deposited with the Central Council, where it will form a part of the national survey of churches and could always be produced if required. This survey, besides amounting to some 170,000 items, nearly all photographs, contains many valuable drawings, plans and reports.

Meanwhile, it is good to know of Mr. Molesworth Roberts' list at the RIBA. Any such measures are to be welcomed.

F. C. EELES, Secretary,
Central Council for
the Care of Churches.

Dunster, Somerset.

ST. ANN'S CHURCH, MANCHESTER

To the Editor of *The Builder*

SIR,—Following your reference, in your issue of February 20, to the appeal for £30,000 to repair St Ann's Church, Manchester, you may be interested in an earlier reference to St. Ann's Church which I have come across in the issue of *The Builder* for January 13, 1849, seven years after your paper was started. It comes from an article dealing with the building of Williams Deacon's Bank, Ltd., St. Ann-street, Manchester, in the year 1849. The extract is as follows:—

"Those who are concerned in the erection say that, with the exception of the small columns and architraves of window dressings, every stone is placed upon its natural bed: being laid in the work exactly as it lay in the quarry. This precaution has been taken in order to prevent the premature decay which occurs too frequently in our stone buildings, and which is almost invariably to be seen on those stones standing on edge, that is, with their natural bed outwards, and consequently exposed to the corroding influence of the atmosphere. The miserable condition of St. Ann's Church immediately opposite this Bank (a comparatively modern work) is ascribed by Manchester people to this oversight."

It is a little too early in the work to say how accurate is this assessment of the cause of the decay to the stone, but it certainly suggests that, 104 years later, this repair work is more than overdue.

ERIC SAXON,
Rector and Rural Dean of
the Cathedral Deanery.

St. Ann's Rectory, Kinnaird-road,
Manchester, 20.

NOISE AND LIVING

To the Editor of *The Builder*

SIR,—In the same way that we have become used to a standard of living much reduced below that of pre-war days (through war-time and post-war rationing), so have we come to regard noise as an inevitable accessory to every-day life. Had this reduction been imposed overnight there would have been, in peacetime, a united public outcry; but the change has been gradual and consequently is now endured.

And so it is with noise: with an unceasing barrage of noise as the assured appendage of commerce and industry, our way of life, and our enjoyment of it, are subtly and insidiously marred. This is especially so for those who live in towns and work under irritating noisy conditions in factories.

The effect of noise upon the human body can be compared to the effect of friction on machines. Unless friction is combated, a machine cannot run smoothly at maximum efficiency; its working life is shortened and under heavy load the temperature increases until proper working is impossible. Likewise the energy drained from the human nervous system to overcome the frictional effect of noise results in a premature onset of fatigue and aggravation leading in the worst cases to nervous breakdown.

Everyone in factory, workshop, or office is affected by noise, unconsciously or not, and their work impaired either in quality or quantity, or both. This decrease in efficiency has been experimentally established, and there is no doubt that in the final count the nation pays the toll, which at present is ill-afforded.

ROGER W. ADAMS [BSc].
30, Farrar-lane, Adel, Leeds.

BOOK

**** Books reviewed in these columns may be obtained on application to the Book Centre, "The Builder," 4, Catherine-street, Aldwych, WC2. Cash (which should include 6d. to cover postage and packing) should accompany the order.*

ARCHITECTURAL PRINCIPLES IN THE AGE OF HUMANISM. By Rudolf Wittkower. (London: Alec Tiranti, Ltd.) Price 25s.

PROFESSOR WITTKOWER'S scholarly book on certain aspects of the architecture of the Italian Renaissance, first published in 1949, is now reissued in a cheaper, revised and in certain respects improved edition. Renaissance artists, as Professor Wittkower shows, were greatly influenced by the Pythagorean conception that "All is Number" and "guided by Plato and the Neo-Platonists and supported by a long chain of theologians from Augustine onwards they were convinced of the mathematical and harmonic structure of the universe and all creation." Architects particularly were influenced by the ratios of the musical scale. By an examination of many of the buildings of the leading Renaissance architects, from Alberti to Palladio, Professor Wittkower shows the extent to which this theory of proportion was realised in practice. A large part of the book is devoted to a study of the work of Palladio, who applied to his designs the principles of harmonic proportion, as found in musical consonances, perhaps more consistently than any other architect of the Renaissance. But even Palladio reserved for himself the right to break the rules, for he concluded his survey of rules for the proportion of rooms with the words: "There are still other heights for rooms which fall under no rule, and the architect has to use them according to his judgment and need." Which destroys the theory very effectively.

Although there has been much research into theories of proportion by modern writers (Professor Wittkower lists a large number of publications, English and foreign), the study is generally regarded to-day—at least from the point of view of æsthetic idealism—as one of historical interest only. Most of these theories of ideal proportion are conflicting, but the chief argument against them is that however satisfying they may seem to be in orthographic projection they are bound to undergo modification as seen in three dimensions and to vary with every point of view. Ruskin, who wrote much nonsense about architecture, was at least on the right lines about proportion. "Proportions," he wrote, "are as infinite (and that in all kinds of things, as severally in colours, lines, shades, lights and forms) as possible airs in music: and it is just as rational an attempt to teach a young architect how to proportion truly and well by calculating for him the proportions of fine works as it would be to teach him to compose melodies by calculating the mathematical relations of the notes in Beethoven's Adelaïde or Mozart's Requiem"; but he concedes that "there are one or two general laws that can be told." Perhaps the eccentricity of some of the more advanced contemporary architecture is due to its being based on atonal music.

Professor Wittkower's book, which is very fully illustrated, is a work of remarkable scholarship. It will be read by many not merely for its historical interest but because, as he says, "the subject is very much alive in the minds of young architects to-day; and they may well evolve new and unexpected solutions to this ancient problem." G. J. H.

OFFICES AT 15, MANCHESTER SQUARE, LONDON, W1

Architects:
GOLLINS, MELVIN, WARD & PARTNERS

Quantity Surveyors :
MAHON & SCEARS

Builders :
WILSON LOVATT & SONS, LTD.

A view across Manchester-sq.

THE site of this building, which was bomb damaged early in the war, is rectangular and has a frontage to Manchester-square of some 33 ft. and to Fitzhardinge-street of 87 ft. The north and west boundaries are formed by the party walls of the adjoining houses.

The architects were required to design a building with the maximum possible office floor area compatible with the town planning restrictions in regard both to height and to the necessity of keeping the character in sympathy with the other buildings in the square. This, though basically Georgian, was considerably altered in the nineteenth century, thereby allowing a certain latitude in the elevational treatment though it was regarded as essential that the windows of the new building should line up with those in the adjoining houses in Fitzhardinge-street.

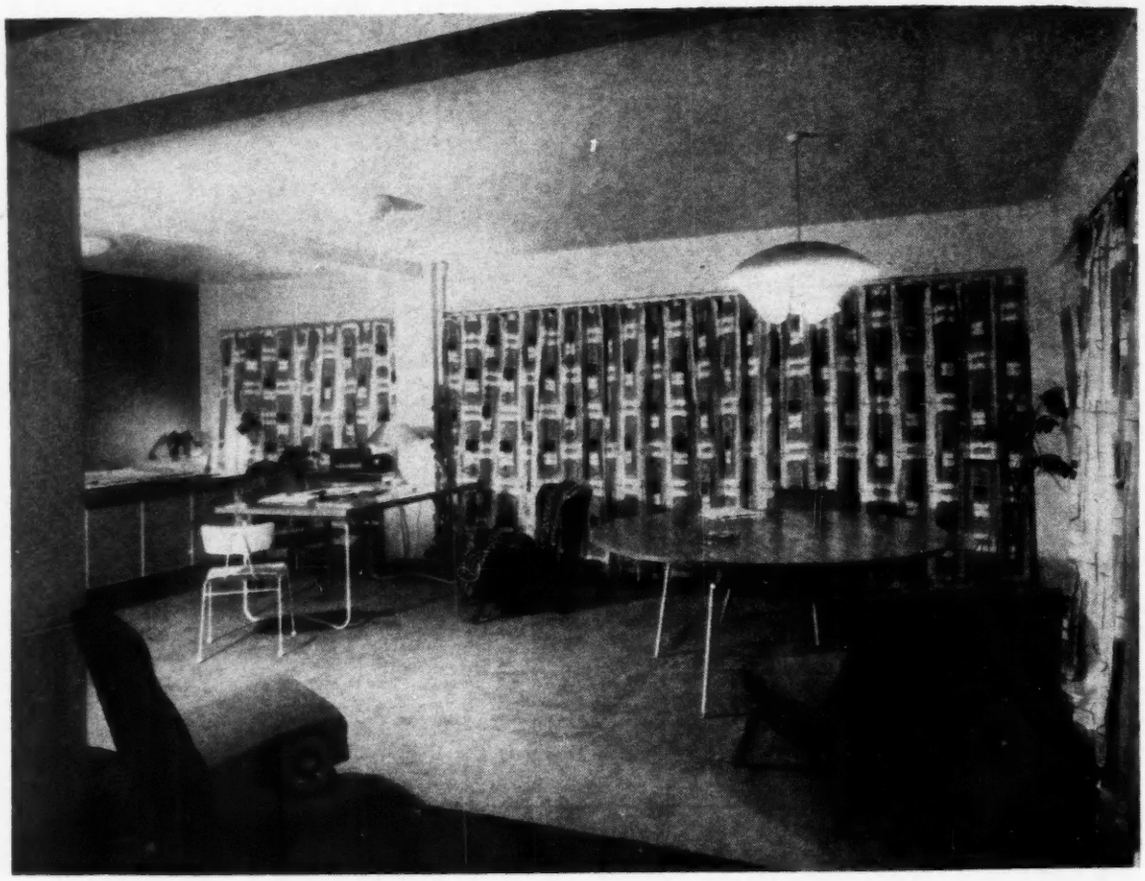
The flank walls of the adjoining houses in Fitzhardinge-street and Manchester-square had been badly shaken by the bomb, and it was not possible to make use of them as party walls ; the new building, therefore, has been designed as an entirely separate self-supporting structure.

The narrow depth of the site and its long frontage facing south to Fitzhardinge-street allowed the offices to be well lit throughout their whole area. The windows at the east end of the offices overlook Manchester-square, and there is also subsidiary light to the staircase and lavatories from the light walls adjacent to the party wall of the adjoining property.

The main entrance to the building is in Fitzhardinge-street from which are reached by staircase and lift all the floors of the building. The lower floors have been planned as undivided office space to be split up as required by the office tenants and the upper two floors as offices for Gollins, Melvin, Ward and Partners, chartered architects.

The top (fifth) floor, which is both top and side lit, is occupied by the drawing office and studio, and the fourth floor is planned as a reception and partners' suite with general office, interview room, waiting space, two partners' offices and cloakrooms. Male and female lavatories are planned at each half-landing of the staircase and the basement is part office space and part boiler-house.

Construction and finishes.—The building is steel-framed and was designed with normal mass concrete foundations. On excavating the basement, however, which is some 16 ft. below pavement level, it was found that the ground was unable to carry the neces-

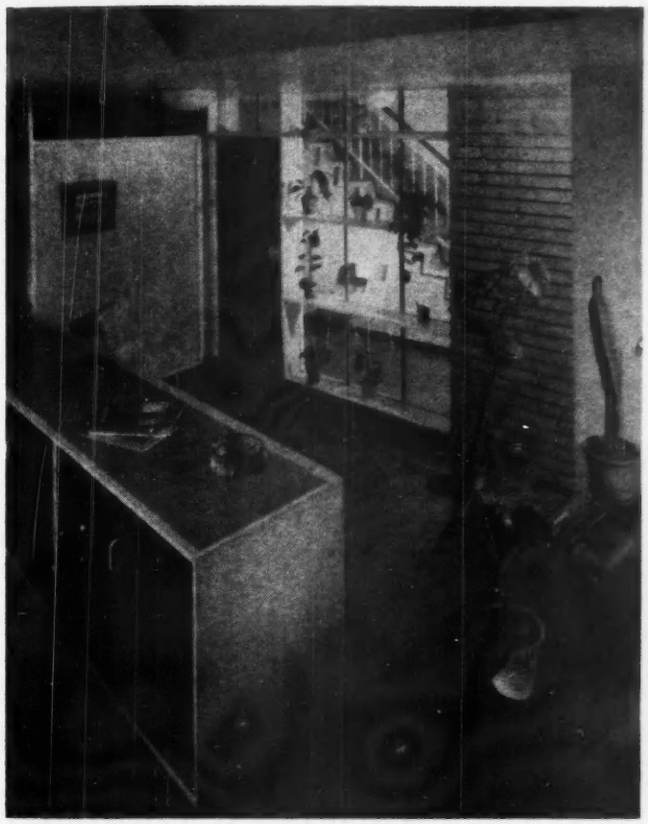


Partners' office, fourth floor.

sary loading as it was the old bed of a tributary of the Tyburn, and pile foundations had to be adopted which, to avoid possible damage to the adjoining buildings by impact, had to be pneumatic caisson type.

The piles are some 35 ft. long with a diameter of 17 in., and are spaced on an average of two to each of the 26 stanchions. This substitution, however, had the advantage of obviating the otherwise necessary underpinning of the existing foundations to the adjoining party walls.

Drawing office, fifth floor.



General office waiting space, fourth floor.
Below : General office, same floor.

The suspended floors and mansard roof, which is slated, are in the Smith block and the staircase in reinforced concrete. The flat roof is in three-coat asphalt work. The external panel walls are brick and the street frontages are faced with London stocks. The specially made casement windows are in hardwood and those on the ground, first and fourth floors have artificial stone surrounds.

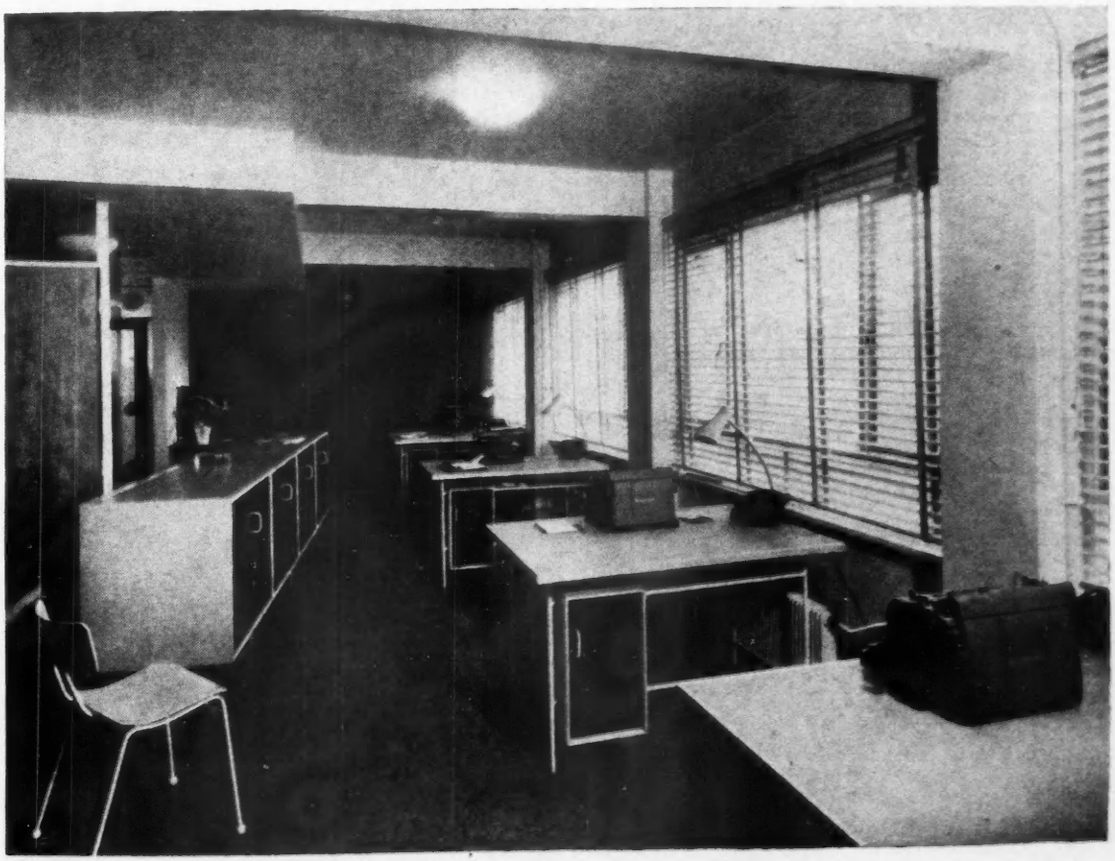
The floor finish in the entrance hall is in terrazzo, in the general office and corridor on the fourth floor in cork, in the staircase and cloak rooms granolithic and elsewhere in thermoplastic tiles.

Services.—The hot-water service to the cloakrooms and low temperature radiator installation throughout the building are fed from a gas boiler in the basement boiler-house.

The automatic-operated passenger lift is of the two-speed type operating at 180.45 ft. per min., and serves basement to fourth with the lift motor room on the fifth floor.

On the fourth the wiring to the post office and inter-communication telephones is in preformed metal ducts buried in the lightweight screen on the structural sub-floor.

The majority of the fittings and furniture on the fourth and fifth floors has been designed by the architects for their special purpose.



General office.—Reception counter with stationery cupboards on the office side. Four typists' desks each fitted with two drawers and a storage cupboard carried on a stoved enamel metal frame.

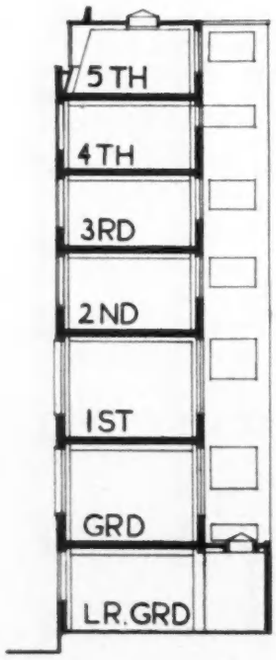
Partners' office and interview room.—The table desks and a circular conference table are faced in Zebrano veneer on stoved enamel metal frames. Standard plan chests are built-in with purpose-made cupboards to form drawing benches.

Fifth-floor drawing office.—All the drawing desks are identical and each consists of a rectangular block board top with two small drawers for instruments, shelves for rolled drawings and reference books and one antiquarian and one double elephant plan chest.

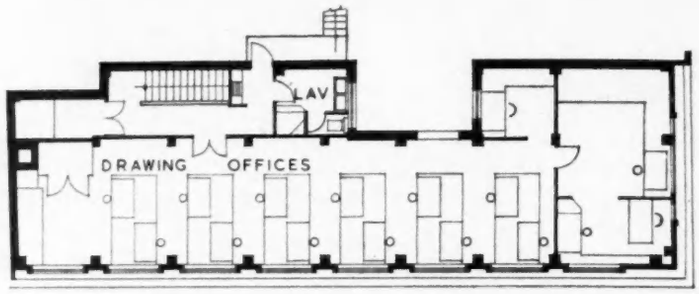
Following is a list of the principal sub-contractors and suppliers :—

Facing bricks, Richard Parton (Builders' Merchants), Ltd. ; piling, Piling and Construction Co., Ltd. ; structural steelwork, Banister, Walton and Co., Ltd. ; structural flooring, Fawcett Construction Co., Ltd. ; electrical, Troughton and Young, Ltd. ; heating and hot water installation, Hope's Heating and Engineering, Ltd. ; lift, Keighley Lifts, Ltd. ; ironmongery Stedall and Co., Ltd.

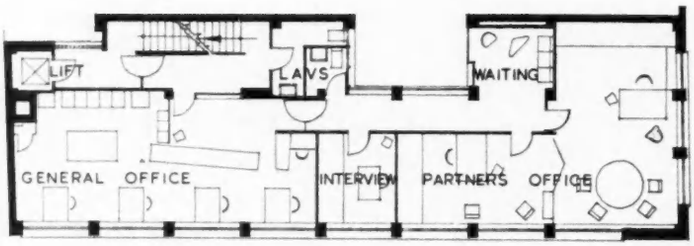
Area railings and stair balustrades, Grundy Arnatt, Ltd. ; windows, doors and joinery, Morgan and Partners, Ltd. ; floor finishes, Hollis Bros., Ltd. ; sanitary fittings, John Bolding and Sons, Ltd. ; asphalt, Asphaltic (London), Ltd. ; artificial stone, Glostone, Ltd. ; terrazzo, Marriott and Price, Ltd. ; metal lantern lights, Henry Hope and Sons, Ltd. ; glass bricks, Aygee, Ltd. ; paints, Jenson and Nicholson, Ltd., Walpamur Co., Ltd. and Merchant Adventurers, Ltd.



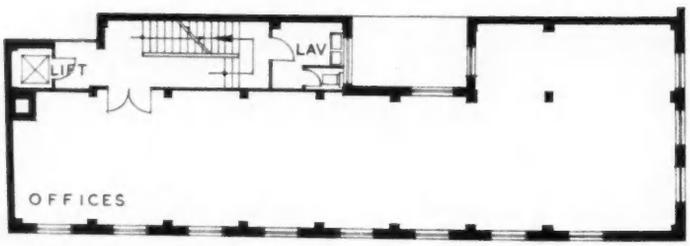
Typical cross section.



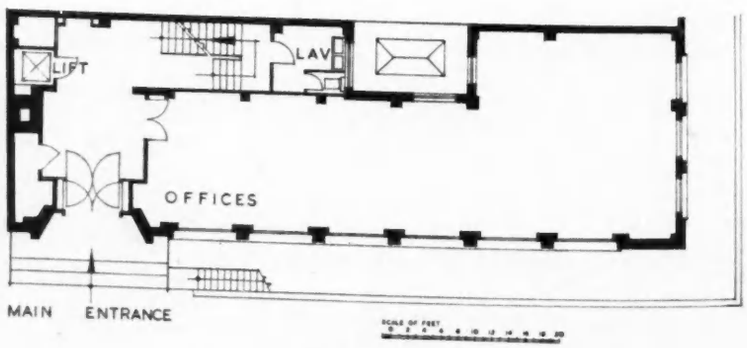
Fifth floor.



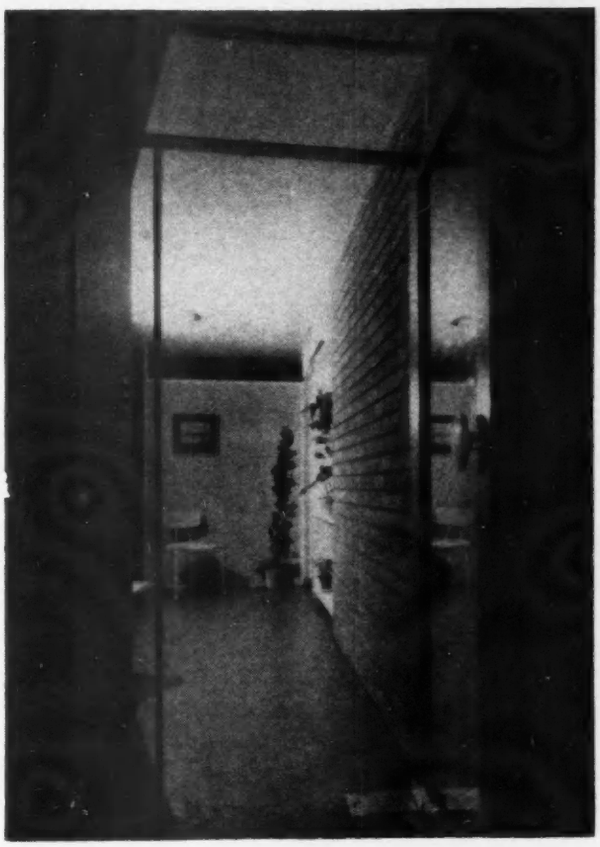
Fourth floor.



Typical lower floor.

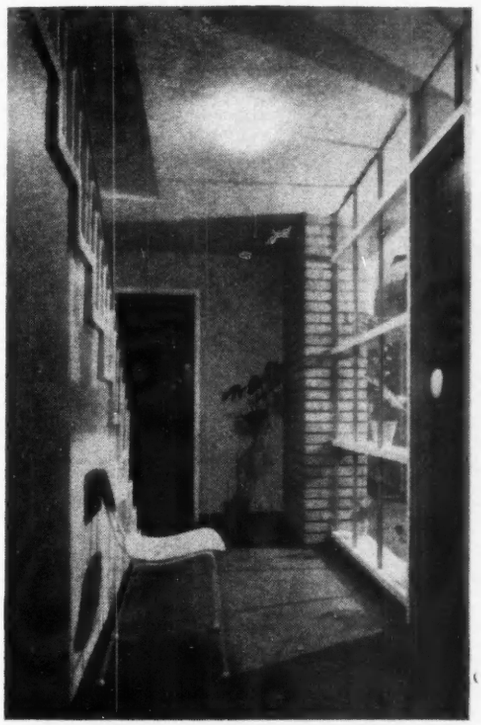


Ground floor.

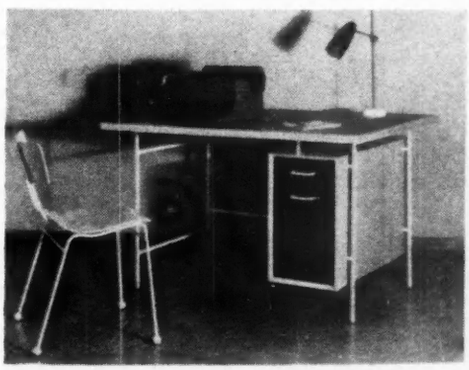


General office waiting space from door off fourth-floor corridor.

Below : Waiting space, on same floor.

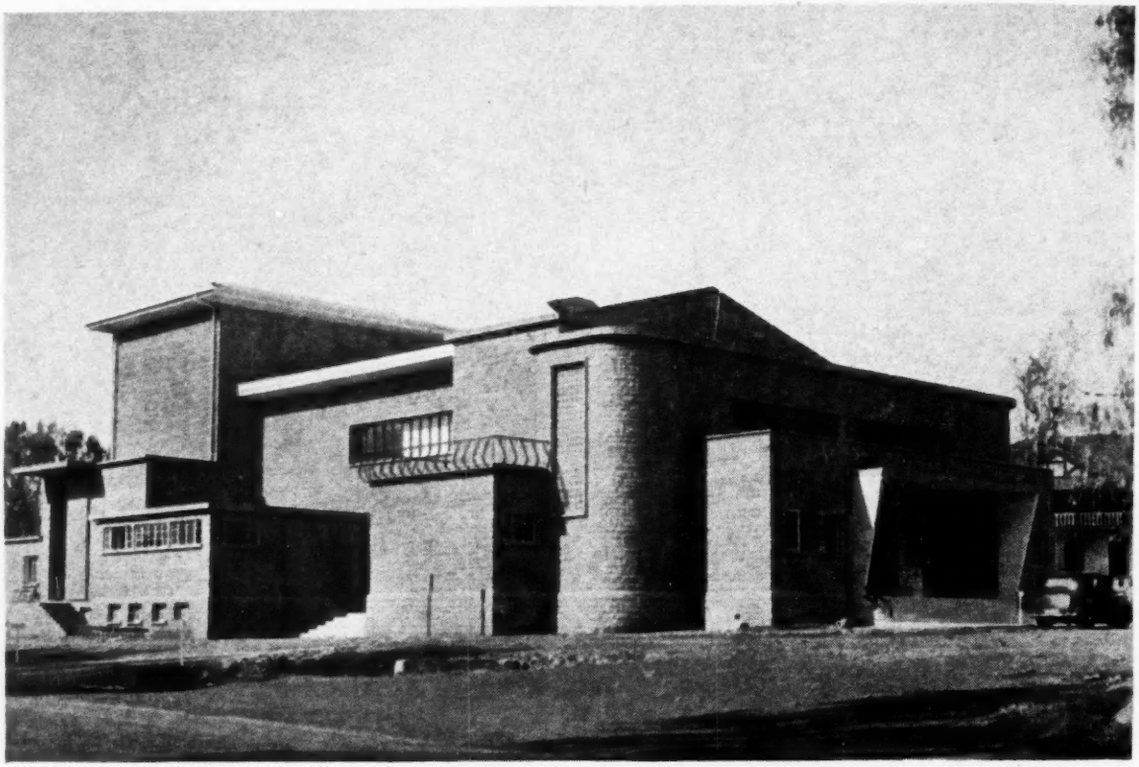


Staircase to drawing office and door to general office, fourth floor.



Detail of typist's desk.

15, *MANCHESTER SQUARE,*
LONDON, W1



KENYA NATIONAL THEATRE, NAIROBI

Architect :

EUGENIE D. HUGHES, MBE, AADipl., FRIBA

THE National Theatre, which has been built in Nairobi as part of the Kenya Cultural Centre, was opened last November by Sir Evelyn Baring, the Governor of Kenya, and Sir Ralph Richardson. In 1947 a representative of the British Council suggested to various cultural and social societies in Nairobi that they should co-operate to build a cultural centre, which would include a theatre, offices for the various societies, and, if possible, an exhibition hall. The Colonial Development and Welfare Fund then made a grant of £50,000, while the Government of Kenya provided a site for the building.

When considering the planning of the theatre the architect had two important requirements constantly in mind. First, the auditorium was to be small enough to ensure a full house, for nothing is more discouraging to actors than playing to a half-empty house ; therefore, it was decided that the hall should hold a total of 414 with a small gallery with approximately 70 seats. This was considered a suitably sized auditorium. The gallery is to be used for the purposes of a Royal box, and the Kenya emblem, a lion, is to be carved by an African sculptor. To further the feeling of intimacy, a warm colour scheme has been designed incorporating the natural colour of the cedar panelling with terra-cotta in varying shades, rust seats and a blue ceiling.

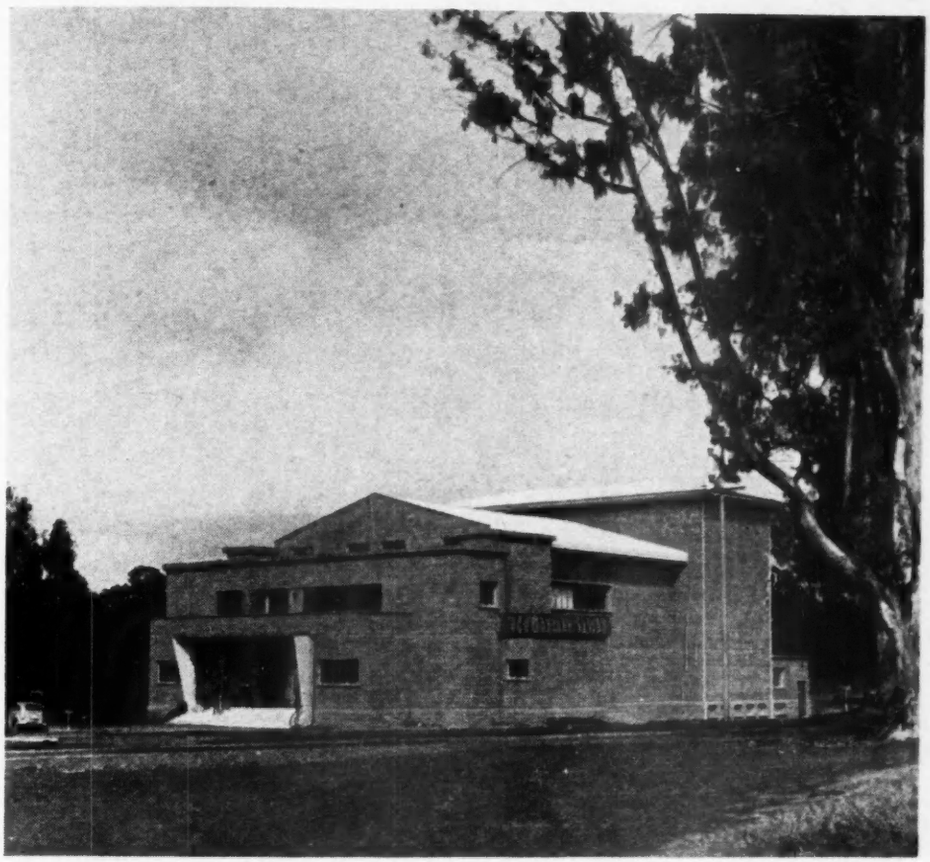
The second requirement was that the theatre was to be designed almost as a multi-purpose hall where plays, concerts, pageants, etc., could be staged. For this reason the theatre had, of necessity, to be a compromise, to meet these varying conditions in the best possible manner.

The key-point which immediately presented itself was the necessity, for the sake of music, to provide an apron stage where the orchestra and soloists could be placed in front of the proscenium curtain and not be hindered by curtains, borders and drapes. An apron stage is also equally appropriate for Shakespeare, musical comedy, opera and pageant plays. However, an apron stage is not always appreciated by drama producers and so sacrifices in musical tone had to be made for the sake of good speaking voice conditions. To obtain a thorough sound absorbing treatment advice was sought from Mr. Hope Bagenal, FRIBA.

To obtain the results that have been achieved the following construction was used : (*a*) the auditorium floor is completely carpeted and the seats upholstered ; (*b*) the gallery increases absorption and the rear wall is covered with special sound-absorbent tiles ; (*c*) the side walls of the auditorium are panelled up to an average height of 3 ft. with wood panelling. Above this and screening the windows are curtains some 15 ft. high by 25 ft. wide which also act as sound absorbents.

The stage is 29 ft. 6 in. deep from the cyclorama to the proscenium arch with a 6 ft. apron stage. The proscenium opening is 32 ft. wide by 21 ft. high. The stage itself is flat and has hardwood boarded floor and is large enough to take a full-size orchestra and choir.

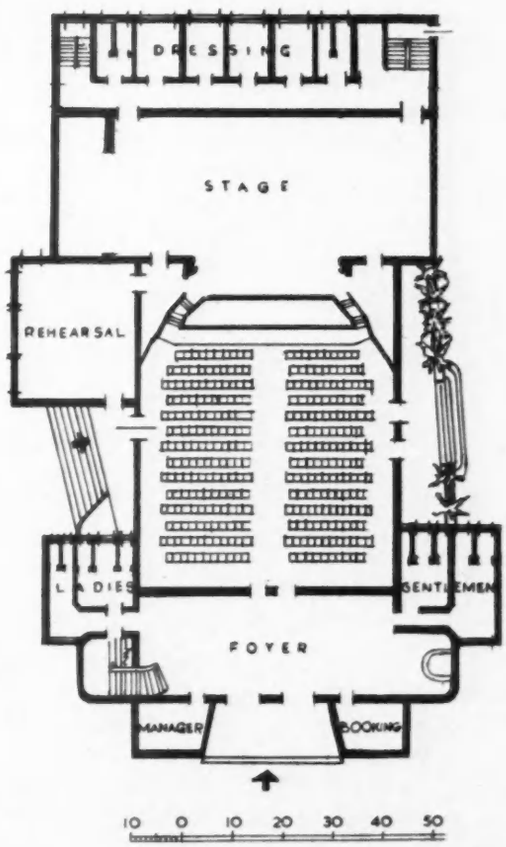
An up-to-date lever-type dimmer lighting switchboard has been installed which controls all stage and auditorium lighting. The lighting batteries are fitted with a four-coloured circuit and soft-edged spotlights.



Counterweighting gear has been installed, and the safety curtain can be operated by hand as well as electrically.

The air-conditioning plant not only supplies clean air, but also controls the temperature in the auditorium.

Everything possible within the limits of the available financial resources has been done to make this National Theatre a worthy home for the arts.



KENYA NATIONAL THEATRE, NAIROBI

Plan of the theatre.

THE "UNICORN" HOUSE

Designed by
PETER O. DIPLOCK

Builders :
A. E. HADLEY, LTD.

THE "Unicorn" House here illustrated is based upon the scientific application of modern materials available for house building, and in particular timber, used in such a way that the speedy method of erection is possible whilst the finished house is traditional in appearance internally and externally.

By using an interlocking method of timber-framed construction consisting of single vertical members and double horizontal members, it is possible to obtain the maximum structural efficiency from every piece of timber used, with the added advantages that it is possible to produce the timber framing in sections in the works, regardless of weather conditions, and, each section being light, requires no mechanical handling plant on the site. The designers claim that the ease of handling of the sections leads to speedy erection on the site so that total time required to complete the house is considerably reduced over traditional methods of building.

ERECTION METHOD

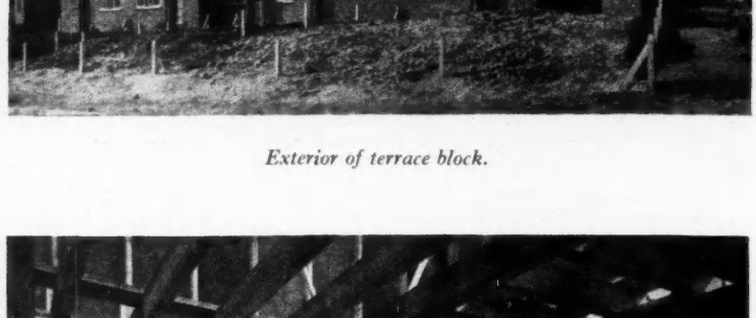
A traditional-type concrete raft is laid down on the site, and the party walls between houses erected in cavity breeze construction to afford the best possible acoustic conditions to the house. Lightweight timber-framed panels are then rapidly erected with interlocking floor joists and roof rafters, thus enabling the tilers to commence work on the roof within two days from the commencement of erection.

When the tiling of the roof and first floor is completed, the bricklayers can then return and add the outer facing of brickwork to finish the house. The advantage of this method of construction is that it is possible for the whole of the interior trades to commence work on the normal traditional finishings of the house before the bricklayers have even commenced. With the present shortage of bricks, the reduction in number of bricks required is an added factor of considerable value.

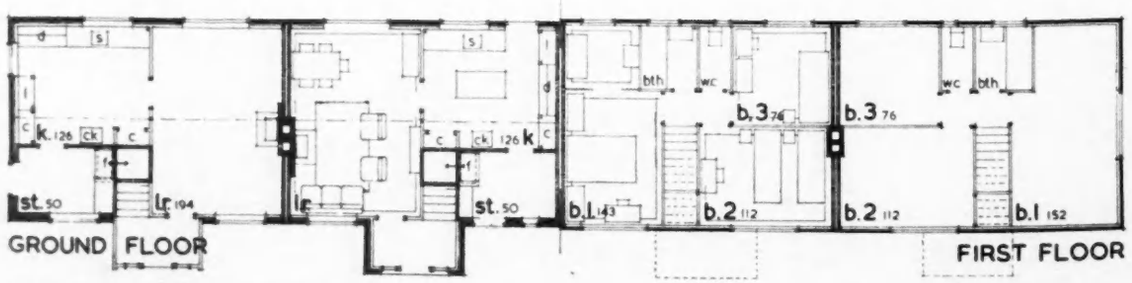
On completion the house appears to have been built by traditional methods, the acoustic and thermal standards being not inferior to those of a traditional house. The house has been approved by the Ministry of Housing and Local Government as suitable for building by local authorities, and has been granted 60-year loan sanction.

It is interesting to note that the "Unicorn" house is designed on the 3-ft. grid, which is one of the main proposals in the recently published Bailey Committee report on House Interiors. The design, prepared by Mr. Peter O. Diplock, and developed by Messrs. A. E. Hadley, Ltd. (Housing Division), Unicorn House, Portsmouth, is a close adaptation of the design placed third in *The Builder* Low-cost Housing Competition.

Exterior of terrace block.



Interior view, showing constructional method.



3 BEDROOM 5 PERSON TERRACE HOUSES. nett total floor area 800 sq.ft. plus store 50 sq.ft.

WD EXPERIMENTAL HOUSING

Plaster Panel and "No-Fines" Concrete System

FIVE pairs of experimental houses are at present being erected by the War Department at Maresfield, Sussex, with the object of finding a method for the production of housing both rapidly and cheaply.

The original conception of the experiment arose from the urgent requirement of the Army for housing both for single and married soldiers overseas, in areas where resources both of labour and materials were extremely limited and crude. As a result, the Department's efforts have been directed towards finding a method which could use the crudest of local materials and which could produce housing extremely rapidly and which also will make the best possible use of the limited resources of skilled labour available to the Army in its overseas stations. For this reason, as much of the work as possible is concentrated into a simple site factory where men can work under good conditions and with close supervision. The factory on the experimental site at Maresfield is only a Romney hut.

The process evolved by the War Department reverses the conventional method of construction. The interior of the house is prefabricated in the site factory in the form of very large gypsum plaster panels, which are made by pouring liquid plaster into prepared moulds, and are then erected on the site by a crane, forming the complete inside of the house. Before the panels leave the factory all the electrical requirements of the house are put into them with predetermined lengths of cable attached. As soon as the panels are assembled on the site, the ends of these pre-cut electric cables are carried to one central junction box and connected up, thus the ground floor of the house is now complete with its electric installation. The outer walls are formed by pouring "No-Fines" concrete between the inner plaster shell and a shuttering of expanded metal in timber frames. All over the top of the box formed by the ground-floor panels, dense concrete is poured to form both the first floor and the ceiling of the ground floor.

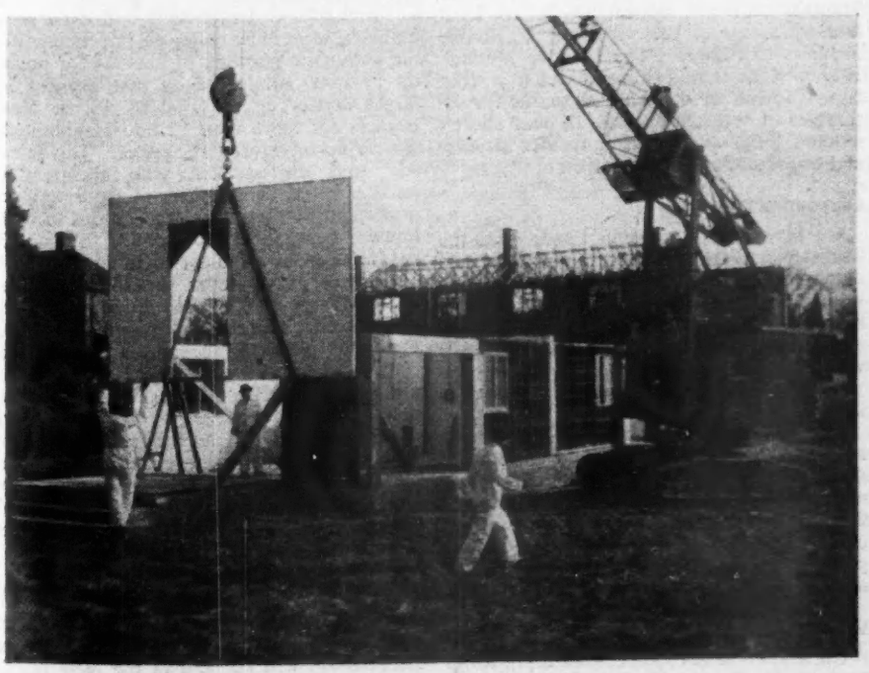
By this stage of the erection the house is complete with its walls, ceiling and floors and its electrical installation complete and all its internal plastering done, up to and including the level of the first floor. This is all carried out within a period of five working days on site. The rest of the house, that is to say the first floor, is completed in a similar manner except that it takes rather less time as there is not the complication of providing a load-bearing floor overhead.

The total result is that a pair of semi-detached houses is built from foundation level up to having its roof trusses installed ready for the placing of tiles within nine days. This has been achieved on the third block of prototype houses to be erected and it is confidently expected that this time can be improved after further experience is gained. It is also expected that these processes will be made more complete with further experiments so that the remaining finishing jobs which are now left to be completed after the nine days, will be progressively reduced.

The total floor area of all rooms in the house is 839 sq. ft., and the area within the containing walls, including sun verandah and partition walls, is 940 sq. ft. The cost of the first pair of houses, in which many difficulties were encountered, was £4,013, but the estimated cost of the fifth pair of houses is £3,388 or £1,694 per dwelling. These figures are inclusive of all externals.

The main contractors are Messrs. C. Bryant and Son, Ltd., of Birmingham.

The War Department have stressed that this system is entirely without any patent restrictions and that it cannot be patented by anybody as all rights ar reserved by the Department. However, whilst reserving these rights in order to preserve freedom and cheapness of the system, they desire to make the system and all information about it freely available to all those interested and it is hoped that if any organisation, private or public, feels that it can obtain advantage by using this system, it will do so.



Swinging a partition into place.

COST OF NEW SCHOOL BUILDING

Ministry to Allow Adjustments

THE Ministry of Education has announced, in a circular to local education authorities (No. 264, dated March 10), that the costs of new school building are to be periodically adjusted in step with the rise or fall of the Ministry's index of building costs. The circular states:—

It was announced in Circular 215, issued in February, 1950, that the net cost per place of new secondary schools to be started in 1951 and onwards must not exceed £240, and that the comparable figure for new primary schools would be £140. These limits have so far been maintained, despite a rise of nearly 35 per cent. in building costs between February, 1950, and the end of 1952.

In terms of constant prices for labour and materials the effect is that schools started in the second half of 1952 were on average nearly 45 per cent. more economical than comparable schools started in 1949. This is a remarkable achievement, and the Minister wishes to thank authorities for their wholehearted co-operation in the campaign to reduce costs and to get better value for money; the results obtained have been invaluable both for the education service and for the national economy as a whole.

The Minister has, however, been considering the probable consequences of continuing to enforce the current limits of costs despite the further rise in labour costs which took effect on February 2, 1953. Although prices for most building materials are at present stable, or in some cases declining, the Ministry's index of educational building costs is now about 4 per cent. higher than at the end of 1952.

The Minister is satisfied that authorities generally cannot at this stage be expected to improve on the 45 per cent. economy achieved since 1949; for many authorities this would involve an unwise lowering of building standards, with serious consequences for future maintenance expenditure.

The Minister has therefore decided that, for the time being, changes in the cost of labour and materials occurring after December 31, 1952, must be offset by corresponding changes in the limits of cost per place for new schools. The basic limits of £140 and £240 per place will in future be subject to periodic adjustment in step with the rise *or fall* of the Ministry's index of building costs.

On February 2, 1953, this index stood at 104, compared with 100 on December 31, 1952. Accordingly, from the date of this circular and until further notice, the limits of net cost per place set out in paragraph 3 of Circular 253 for primary schools, and calculated according to the formula described in Building Bulletin No. 2A for secondary schools, will be raised by 4 per cent.

During the financial years 1953/54 and 1954/55 the Minister will announce revised limits of cost per place whenever the Ministry's index of prices for labour and materials shows a change, either upwards or downwards, greater than 2 per cent. since the date of the previous announcement. The planning of schools in the 1953/54 and 1954/55 programmes may therefore be put in hand in the assurance that, within a maximum variation of 2 per cent., the limits of cost applicable at the final approval or tender stages will permit the use of the same amount of labour and materials per school place as on December 31, 1952.

The Minister cannot at this stage give an assurance that the procedure described above will apply without modification in the financial year 1955/56; developments in the meantime may show how new economies can be made without lowering educational standards or increasing maintenance costs. The arrangements for the 1955/56 programme will therefore be announced when this programme is compiled.

Where the Scheme Applies

The new procedure will also apply to the limits of net cost per square foot for new colleges of further education announced in Circular 236 and Building Bulletin No. 5. It will not apply to extensions of existing primary and secondary schools (except where these can be costed on the same basis as new schools), nor to projects for special schools, school clinics and training colleges for teachers. Revised costs for jobs of these kinds already included in a main or reserve building pragramme will be considered, according to the circumstances of each case, when plans are submitted.

There will be no change in the £6,500 limit of cost for individual minor capital projects, nor will the new procedure apply to the total value of the authority's allocations for minor works (including the allocation for school meals projects costing less than £1,000).

When submitting proposals for inclusion in a building programme, the authority should calculate the total net cost of the project in terms of the limit of cost in force at the time.

The Minister hopes that authorities will welcome the new arrangements, which are designed to give those concernd with educational building stable terms of reference on cost. She relies upon authorities to take full advantage of this stability to seek, in co-operation with the Ministry, new ways of obtaining still better value for money in educational building.

Details of Limits

The following details on the limits of cost for educational buildings are given in an appendix to the circular:—

New primary and secondary schools.—Until further notice, the limits of net cost per place for new primary and secondary schools will be as follows:

Type of School	*Limit of net cost per place*	
	With scullery only	*With kitchen*
Primary schools	£ 143	£ 146
Secondary modern, grammar, bilateral modern/grammar and comprehensive schools	246	250
Secondary technical, bilateral modern/technical, bilateral grammar/technical, and multilateral schools.	Limit of net cost per place calculated according to Building Bulletin No. 2A (less £4 per place if no kitchen is provided), plus 4 per cent.	

New colleges of further education.—Until further notice, the limits of net cost per square foot will be 52s. for workshop accommodation and 83s. for other accommodation.

Annual Report

The annual report for 1952 of the British Wood Preserving Association, 6, Southampton-place, WC1, has been published, together with a list of members as at January 1, 1953.

IN PARLIAMENT

Planning Act Claims

ON March 10 MR. JAMES JOHNSON asked the Minister of Housing and Local Government if he was aware of the many cases of hardship that had occurred where small property owners had to pay development charges, because they had omitted to make their claims under Section 80 of the Town and Country Planning Act, 1947, before June 30, 1949; and what action he proposed to take in this matter.

MR. MARPLES, who replied, said that the Minister was not aware that there were many such cases; and the time for making these claims must be terminated some day. People had already had three and a half years beyond the year allowed by the statute. Nevertheless he was anxious to avoid hardship wherever and whenever he could; and he was therefore prepared to continue entertaining claims under Section 80 for a further period.

Improvement Grants

On March 10 MR. CHETWYND asked the Minister of Housing and Local Government what action he was taking to stimulate application for improvement grants under the Housing Act, 1949.

MR. MARPLES said that the Minister was sure that these facilities needed only to be better known to be more widely used, and he was considering how best to bring this about.

Heating and Insulating Houses

On March 10 MR. GRIMOND asked the Minister of Housing and Local Government what was his present advice to local authorities on the provision of space heating in new houses.

MR. MARPLES said that a list of tested and recommended solid fuel appliances had been agreed with the Coal Utilisation Council in consultation with the Ministry of Fuel and Power and it was a condition of approval of tenders for local authority house-building that appliances were selected from this list.

In reply to a further question by Mr. Grimond, MR. MARPLES said that the Minister had not issued advice to local authorities about the provision of double windows and doors. The Housing Manual, 1949, and the technical appendices to it, contained advice on desirable standards for insulation of walls and roofs; he was shortly sending local authorities a further circular and memorandum on the subject.

Coronation Fencing

On March 10 Mr. Arthur Lewis asked the Minister of Works whether, to assist the war-damaged towns and cities in repairing their war damage and fencing in their war-damaged cities, he would make available to them the timber, fencing and other materials which would normally be removed or destroyed, after removal from the Coronation line of route.

MR. ECCLES said that some of the fencing used in the Royal Parks would come from the Ministry's normal stocks. All other materials used in constructional work along the Coronation route remained the property of the contractors concerned. He did not propose to make stipulations about the subsequent use of any material except timber.

Westminster Hall Window

On March 10 MR. ECCLES, in reply to Sir Edward Keeling, said that the scaffolding which masked the war memorial window in Westminster Hall would be removed in time for the window to be properly seen by visitors to the Coronation.

MOW and Dearer Coal

On March 10, in reply to Major Anstruther-Gray, the Minister of Works, MR. ECCLES, said that the estimated increased cost of coal to his Department in 1953-54 caused by the recent rise in price, was about £65,000.

School Building

On March 12 MISS HORSBRUGH, Minister of Education, told Mr. Powell that the value of educational building contracts completed during 1951 was £34.6 millions, and during 1952, £47.5 millions.

Greenwich Observatory

On March 11, in reply to Sir Edward Keeling, MR. J. P. L. THOMAS, the First Lord of the Admiralty, said that satisfactory arrangements had been concluded between the National Maritime Museum and the Royal Greenwich Observatory which would enable part of the Wren building to be open to the public during Coronation year, and a suitable display of exhibits was being arranged. This would include admittance of the public to the room containing the Airey Transit Circle when this instrument was not in use for astronomical observations.

THE LARGER HOUSE

Licences Can Be Granted

THE POINT that houses over 1,000 sq. ft. are allowed was made by MR. WILFRED HORSFALL, president of the National Federation, at a meeting of Council of the London Master Builders Association in London on March 19. Generally speaking, said Mr. Horsfall, the public, local authorities and the building industry had warmly welcomed Mr. Macmillan's decision to allow freedom to build houses up to 1,000 sq. ft. in size, and in the fine building weather and longer days of the coming months we could confidently expect to see more and more houses going up for owner occupation towards the 300,000 houses target.

"Some local authorities, and even some builders, seem to be under the impression that the automatic granting of licences for houses up to 1,000 sq. ft. means that licences for larger houses up to 1,500 sq. ft., or block licences for more than 12 houses, should be slowed up or refused altogether. This is not so," said the speaker, who added: "In circular 93/52 the Minister of Housing made it abundantly clear that applications to build houses between 1,000 sq. ft. and 1,500 sq. ft., or from a builder to build more than 12 houses of whatever superficial area up to 1,500 sq. ft., should continue to be encouraged. Clearly the previous requirements that need for accommodation must be proved, and that the occupants of the houses must be chosen by the local authority, have definitely been cancelled by Paragraph 5 of the Circular. Don't let failure to appreciate these points hold you up. If your local council are putting obstacles in your way, contrary to what the Circular says, and won't be convinced by your arguments, tell the Federation about it."

Gauge and Tool Exhibition

The fourth gauge and tool exhibition, to be organised by the Gauge and Tool Makers' Association, will be held in the New Horticultural Hall, Elverton-street, Westminster, from Monday, May 17, to May 28, 1954.

THE CONTEMPORARY ROLE OF INDUSTRIAL STANDARDS

Mr. Binney's Paper at the Royal Society of Arts

THAT the benefits of standardisation to a country faced with an output problem like Britain, were of crucial importance, and were still a long way from being fully realised, was asserted by MR. H. A. R. BINNEY, CB, Director and Secretary, British Standards Institution, in a paper on "The Contemporary Role of Industrial Standards," given at the Royal Society of Arts, in London, on March 18, with Sir Graham Cunningham, KBE, in the chair.

Mr. Binney said he would not waste his audience's time in combating the myth that "standardisation" leads to uniformity and mediocrity and applies a brake to enterprise and invention. On the other hand, he would not ask them to take it for granted that the development and application of industrial standards was necessarily a good thing in every case. In directing the present rapid expansion of the BSI's work, he held firmly to the view that the timing must be right and that the need must be proved in each individual case.

Basic Materials

"What is the present pattern of standards of work?" Mr. Binney continued. "A very large part still concerns the basic materials of production and construction. Through the combined efforts of producers and users of these materials, precise and well-tried specifications for many hundreds of raw and processed materials, used in thousands of factories and constructional projects, have been embodied in British Standards." As an example, 95 per cent. of the steel produced in this country was made and sold in accordance with British Standards.

"And here I should note the important spur to competition provided—and the freedom from restrictive attitudes evidenced—by a recognised and open, published specification. Authoritative and open standards are the very essence of competition."

From materials the work branched out into the components, and often complete equipment made by and used in the different industries of the country. The emphasis in particular cases could vary from dimensional features to secure interchangeability of parts to construction and performance factors concerned with safety, to the settlement of performance ratings to assist purchasers and sellers and even to standardisation of parts and of markings for blood-transfusion equipment and anaesthetist apparatus.

The field of work was as wide as that of British industry itself. As a rough comparison it was right to say that about 60 per cent. of it was directed to the engineering and metal trades, about 30 per cent. to chemicals and building together, and the remaining 10 per cent. to textiles and other industries and trades.

What were the directions in which this work was of special significance to-day? He thought this might profitably be viewed under three main headings: first, productivity and exports; second, defence; and third, consumer goods and guarantees of quality for the man or woman in the street.

"Much of what I have said so far shows that the value of industrial standards as a direct aid to efficient production is—indeed, has long been—widely accepted in British industry," the speaker continued.

"But this is still very far from saying that all that could be done in this direction has, in fact, been done. Furthermore, the present economic situation of this country and Western Europe has accentuated the need to increase productivity by all and every means. You will all be familiar with the studies of American industries which have been made in recent years. Whatever we may individually think of these studies it is, at any rate, significant that nearly all the productivity reports on a score or more of different industries recommend the more extensive use of standardisation techniques in this country as a prime source of cost economy and, hence, of manufacturing efficiency and competitive power. There can, indeed, be little argument in these days against the proposition that the 'three S's'—standardisation, simplification and specialisation—together provide one of the readiest means of achieving that all-round increase in output per man- and machine-hour which alone will preserve our export levels and improve our national standards of living."

To his mind, the most significant feature of American techniques was that they were based on a general understanding and acceptance of sensible standardisation as part of what might be called their "cost-conscious psychology." To compete *in* the United States, therefore, and *with* the United States, there was a need to acquire some of this habit of mind. The kind of advantages which could accrue were economy of raw materials, simpler and more effective quality control, easier replacement and maintenance, reduction of stores lists, simplification of correspondence and quotation and economy of design work.

"This last economy is worth special attention. By specifying standard parts and fittings the time of designers, draughtsmen and other creative personnel, who represent one of our most scarce and valuable assets, can be saved for better purposes. . . . Not that I would claim that standardisation offers a panacea for every productivity problem. But I do assert that its benefits to a country faced with our output problem are of crucial importance—and I repeat that they are a long way yet from being fully realised."

Importance to Export Trade

In regard to the export trade, Mr. Binney said that it was frequently found that a guarantee of conformity to an established British Standard was all that the overseas buyer needed by way of assurance that the material or commodity concerned would meet his requirements. But as in recent years the importance of standards to our overseas trade had grown, so had the tendency for individual nations to develop standards of their own.

Accordingly, it had now become essential to our survival that standards set up in other countries should not constitute, as they could so easily do, a barrier to our exports as formidable as a new tariff, or a policy of import restrictions. For these reasons there had in recent years been a marked increase in the activity of the BSI at the international standards level. The work was pursued in the broad interests of securing that British Standards were used to the maximum extent possible overseas and, secondly, or alternatively, that overseas standards, so far as we were able to ensure this, were suited to British practice and techniques. Here, especially, close collaboration with other Commonwealth countries was maintained.

On the question of standards for the consumer, Mr. Binney said that those for "Kite"-marked furniture had a special interest and might well be the forerunner of a new class of standard for consumer goods. There were some difficult problems; not least the perennial problem of assessing just where to draw the line between what was adequate quality and what was not, and how to draw that line. In an industry like the furniture industry, any serious limitation on the freedom of designers would be most unwelcome both to manufacturers and to the public, and the "line" was, therefore, to be drawn by a series of performance tests. The principle was that of applying to articles of furniture measured stresses and strains which simulated actual conditions of use in the home. It was a new technique in this or any other country, and would doubtless have to be refined as experience was gained, but he could say that some of the industry's best practical men who were sceptical of these performance tests at first had been converted to strongest support.

CALL FOR TEAMWORK IN BUILDING

Professor Gardner-Medwin's Inaugural Lecture at Liverpool

ARCHITECTURE to-day—from simple house to city centre—had become a science and art of intricate teamwork, declared PROFESSOR R. J. GARDNER-MEDWIN, FRIBA, in his inaugural lecture as Roscoe Professor of Architecture at Liverpool University recently.

Taking as his subject Science, Art and the Architect, he made an appeal for more teamwork in building, with the architect in the position of what he described as "the conductor of an orchestra."

He said that at the university they realised the great opportunity they possessed in developing teamwork in the training of the architect, and in the training of many other professions associated with architecture and building science.

The main reason for the low standard of efficiency in the building industry to-day compared with the standard of efficiency in other industries, and the equally low standard of efficiency, on average, of architectural design, was that the specialists in the factory and on the site were seldom integrated in an effective single operation.

"If to-day," he said, "we are to have good architecture, good housing, good civic design, there must be inter-action between the skill of the architect, of the town-planner, the engineer, the scientist, the manufacturer and the contractor. The architect must set up his board in the laboratory and on the site.

"The architect," he said, "is in the position of the conductor of an orchestra—conducting his own composition. There was a time when he conducted a quartette—builder, foreman, craftsman and tradesman—but now he conducts a full symphony orchestra of technical specialists."

OBITUARY

S. J. Edwards, FRIBA

WE REGRET to announce the death, which occurred suddenly, at Richmond, Surrey, on March 14, of Mr. Sidney James Edwards, MA, FRIBA, FRICS.

HOUSING SUBSIDIES AND THE REDEVELOPMENT OF CENTRAL AREAS

The "Artificial Incentive" to Build Flats

THE present system of granting housing subsidies under which the flat subsidy was much more favourable than the house subsidy was "quite indefensible," declared MR. HENRY BROOKE, MP, when he addressed members of the Royal Institution of Chartered Surveyors in London on March 16.

Referring to a report entitled "Living in Flats," which was prepared by a committee of which he was chairman, Mr. Brooke said:

To the question which is the better to live in, a house or a flat, we gave the unhesitating answer that it depends upon the person or the family. For some people a flat has great advantages, whereas others feel the want of a house because of material restrictions which are inherent in living in a flat, however large. There is an infinite variety in people's needs and problems—a truism which is not always remembered.

But though some people are thoroughly well suited by life in flats, and to others the choice between a house or a flat might make little difference, we came to the unanimous conclusion that for one class of family in particular, the family with several children, it is well nigh impossible to provide in flats a really suitable environment. There may be an exception to that if the family has plenty of money to spend. But the kind of sites which I have in mind this evening are hardly such that one can reckon on their being lived on entirely by wealthy people. Unless one is going to rule that no provision is to be made henceforth on high-cost sites for middle-class or working-class families with several children, the only possible conclusion is that we must somehow find means of providing even in central areas a substantial amount of accommodation in houses and maisonettes rather than in flats.

In dealing with the subsidy anomaly, Mr. Brooke said: Under the 1952 Act the basic subsidy for a house built by a local authority is £35 12s. 0d. a year for 60 years; in the case of this and every other current housing subsidy, three-quarters comes out of the taxes and one-quarter out of the rates. Build houses on land where the cost of the site as developed is £2,750 an acre, and that is still all the subsidy you get. But build on that site a block of flats of four storeys or more, with lifts, and you can get a subsidy of no less than £86 3s. 0d. a year for each flat for 60 years. At the current rate of 4½ per cent. at which local authorities can borrow, the present capitalised value of those subsidies are £769 for the house and £1,860 for the flat.

More Expensive Land

Let us look at more expensive land, say £9,500 an acre. At that level the subsidy for the house becomes £57 12s. 0d. a year, and for the flat £94 7s. 0d. a year. The capitalised values are £1,222 and £2,038 respectively. That is the maximum subsidy for a house in any circumstances. For a flat, the subsidy rises by a further £2 12s. 0d. a year for every £2,000 (or part thereof) by which the cost of the site exceeds £10,000 an acre.

On social grounds, the subsidies for houses and flats should be so fixed in relation to one another that the difference between them represents precisely the extra cost of building flats instead of houses, after taking into account the larger amount of land which a house requires compared with a flat. If a proper relationship like that were established, either for the subsidy as a whole or for that part of it which is provided from the Exchequer, the housing authority could then decide on purely social grounds what ratio between houses and flats it wanted, when redeveloping a site, without being influenced by financial inducements.

If, on the other hand, national economic considerations are to prevail, then it becomes desirable to make the ratio of houses to flats as high as possible, because houses are cheaper and quicker to build and require less labour and materials. That would be an argument for creating a bias in favour of houses, by making the house subsidy more favourable than the flat subsidy.

At present, strange to say, the flat subsidy is much more favourable than the house subsidy. That is, of course, quite indefensible. Opinions may differ as to the exact excess cost of a flat over a house, and I will not dare to dogmatise. But it is certainly not possible to justify subsidies for flats higher by £800 to £1,100 in capitalised value than the subsidies for houses on similar land.

Origin of Discrepancy

How has this strange discrepancy arisen? The answer is unexpectedly simple. The Ministry has arrived at the subsidy for flats by taking London costs as the basis for the calculation. This is understandable, for only in London have the local authorities been building flats on a large scale. In London not only the constructional costs are high, but so are the outgoings of the LCC and the London Borough Councils on repairs and management.

The house subsidy, on the other hand, has been calculated by taking the average cost of building a house over the country as a whole, outside the high-price London area, and by taking likewise the much lower cost of repairs and management outside London.

Furthermore, the basic subsidy on flats begins to be stepped up as soon as the cost of the site as developed rises above £1,500 an acre, whereas there is no increase in the basic subsidy on houses until the cost of the site exceeds £3,000 an acre. There is no reason in logic for this difference of treatment.

On both these scores, therefore, it is no wonder that to a London local authority the amount of subsidy on houses seems inequitable, when compared with the rather generous rates of subsidy on flats. It is not surprising that the half-yearly figures published by the LCC have been showing a revenue surplus on its new flats, after allowing for the subsidies, but a deficit on its new houses. One must not read too much into these figures, because they are liable to fluctuate, but over all the new LCC dwellings for which rents were first fixed in the first half of 1952 there was a calculated surplus of £19 18s. 6d. per flat per annum, after allowing for subsidies, and a calculated deficit of £10 2s. 3d. per house per annum.

At the next review of the housing subsidies I feel certain that the Minister ought to correct the discrepancy as it affects London. There ought to be no artificial incentive to the London housing authorities to build flats and nothing but flats. He could correct it by adjusting the subsidy for houses upwards, or the subsidy for flats downwards. I think one can guess which is the likelier, when one realises that on land at £7,000 an acre the subsidy for each flat now is 35s. 0d. a week and on land at £17,000 an acre it is £2 a week. For that guess I shall very likely get into trouble with many of my local authority friends, and certainly with my wife who is chairman of a borough council housing committee in London and is continually struggling to make ends meet. But we must all be frank with ourselves and agree that a subsidy of as much as £2 a week from other people's pockets to keep down the rent of a flat is going to become very hard to defend.

That brings me to my last question. Is it right at all to make special subsidies available for municipal housing development on high-cost land? Is the subsidy for expensive land intrinsically a mistake, and ought we to let market prices determine location entirely, and drive out all this type of residential building from the centre?

I do not believe that social considerations or land use will allow us to do other than press ahead with a great deal of residential redevelopment for all classes of the community, even on high-cost urban land. We have a variety of needs to provide for. We cannot decentralise London ruthlessly, partly because I am sure there is an upper limit to the rate at which the population will be prepared to move. Secondly, the social and financial problems are not only at the centre; they await us in the New Towns, too, and we shall not help to solve them if we make the pace of development there too swift. Thirdly, I am inclined to think we may be on the eve of a vehement revulsion against the eating up of more and more green fields all round the great cities—a revulsion on the part of the local people to whom "overspill" is going to become an accursed word.

To sum up, I want the post-war ratio of houses to flats in London to rise, and I believe it can. In some of the great provincial cities there is a prejudice against flats which ought to be overcome, because those cities ought to envisage redevelopment of cleared areas to fairly high densities, instead of spreading two-storey houses ceaselessly outward over the countryside. Furthermore, there are miles and miles of slums to be cleared, not only in London but elsewhere, too, and slum clearance is next door to impossible unless some high-density redevelopment can be planned on or fairly near the land where the slum houses have been leaning against one another.

Keeping the Balance

So there is plenty for the Minister to think about, and plenty for us, too. He needs to amend the subsidy system so as to stop tempting London housing authorities to concentrate wholly on flats, and at the very same time to encourage provincial cities to favour flats more than they have been doing. Meanwhile he must be seeking to save public money on ordinary municipal building, in order to have at his hand the money he will soon need for stimulating slum clearance.

We, for our part, have to look ahead to the cities of the future. It has been said that we shape our buildings, and they shape us. If we build nothing but flats, they will shape us with a vengeance. I am deeply convinced that the small house with a patch of ground, even if it is only a yard to keep rabbits, is a part of the British way of life which, if we wholly destroy, we destroy at our peril.

RESPONSIBILITY FOR STRUCTURAL REPORTS

Some of the Legal Difficulties that Arise

THE burden of legal responsibility which falls on the shoulders of the surveyor after the delivery of a structural report, were examined by MR. GUY BRISCOE, FRICS, when he read a paper at the Royal Institution of Chartered Surveyors on March 2, entitled "Responsibility for Structural Reports," from which we take the following extracts:—

The term "negligence" has, of course, a wide interpretation in law and can be applied to many acts of omission, commission or carelessness far beyond anything with which we as surveyors would normally concern ourselves. Our particular viewpoint of the law to-night is negligence in offering professional opinion. The underlying legal principles can be stated fairly concisely, but the application of those principles is a question of fact in each case and usually presents considerable difficulty.

The general principle of the law of negligence is the failure to exercise that care which the given circumstances demand. What amounts to negligence depends upon the facts of each particular case, and the term does not lend itself to any precise definition of universal application. It may consist of doing something which ought either to be done in a different manner or not done at all, or in omitting to do something which ought to be done. The degree of care to be exercised may vary with the accompanying circumstances, and it is for the judge to define this and it is the duty of the jury to decide whether that degree of care has been attained. The practice of a profession from its very nature demands some special skill, ability and experience and carries with it a representation that the person practising it possesses to a reasonable extent the amount of skill, ability and experience which it demands. He is liable to a client if he does not possess it or is negligent in using it. His duty is honestly and diligently to use that care which would be used by others qualified in the same profession. The degree of care, therefore, is generally measured in the Courts by what other experienced and responsible men of the same profession would have done in similar circumstances, and it is to that evidence that the judge will look.

Prescription of Innocence

One of the basic principles of British Law is the presumption of innocence until the contrary is proved, and this maxim is equally true in the Civil as well as the Criminal Courts. Negligence must be proved, and the onus of proof lies upon the party who alleges damage. There is an exception, however, whereby this principle is reversed. If the negligence is of such an absolutely obvious and patent a nature and thus speaks for itself, then the surveyor must assume the burden of satisfying the Court that he applied with proper diligence that care, skill and experience which might have been expected from other qualified men in similar circumstances.

It is perhaps unnecessary for me to repeat that where negligence is alleged and the action is one for breach of contract the remedy lies in damages. The amount of such damages is generally assessed by the Courts as being the amount of the financial loss suffered by the plaintiff as the result of the negligent advice upon which he had acted. The damages are not necessarily restricted to the actual loss suffered as a result of the negligent act, but may include expense to which the plaintiff has been put as a result.

I have heard it said on numerous occasions that for a fee of a few guineas a client cannot expect the same advice that he would receive had a more adequate fee been offered. This is a wholly incorrect assumption and is one which is fraught with the utmost danger, and unless the surveyor is willing to exercise to the full all his knowledge and experience, both in the carrying out of the survey itself and also in the writing of the report, he should in no circumstances accept instructions. It cannot be too highly stressed or repeated too often that in accepting instructions to advise a client a surveyor undertakes an onerous duty, a responsibility and a heavy liability measured in money for negligent mistake.

Liability for Loss

The surveyor will not, however, generally be held liable for loss resulting from a mere error of judgment upon a difficult point if he can show that proper diligence was exercised in ascertaining all the facts as they existed at the time he formed his opinion. The majority of the reported cases have arisen through carelessness in this regard. All the facts should be noted as they were found and of whatever nature, obvious or obscure, and opinion be then expressed upon the inferences which can be drawn from those facts.

Having dealt at some length with what in my opinion is the primary and most important part of the surveyor's duties, namely to ascertain all the facts and to express an opinion on the inferences to be drawn therefrom, I think we may now proceed to the making of the contract upon which all these actions arise, that is to say the terms of the instructions. It may sound very elementary, but I think cannot be repeated too often, that the instructions should be absolutely clear, precise and fully understood by both parties without any ambiguity. It is, however, by no means unusual for what is quite clear to the surveyor to be not in the least understood by the lay client. It is, therefore, our first duty to ascertain exactly what is required, and in many cases the client has to be told in precise terms what he should require.

Whatever the scope of the instructions as they may finally be agreed, it is a wise practice to confirm them in writing and in detail to the client and to obtain his acknowledgment before embarking upon the inspection. The wider and less specific the instructions, then in my opinion the more comprehensive must be the survey and report. We all know of the cases where one is asked to go and look at a certain property and to say whether it is all right to purchase. These are, of course, wide and most difficult to interpret and unless reduced to more precise terms entail, in my opinion at any rate, a detailed survey of the property and all its components including services and installations, even to the extent of obtaining specialist advice. It is prudent, therefore, to try to ascertain whether the client really understands what he is asking you to do and whether he will authorise you and also obtain permission for you to uncover foundations, test drains, lift floor boards, obtain ladders and so on, and in addition to employ specialists to report upon the electrical, heating, water or lift installations as may exist. The surveyor should never be diffident in insisting that he be authorised to obtain such specialist reports should he consider it advisable, and if he be refused it should be so stated in his report, and in no circumstances should he be tempted to comment in any way upon such matters unless, of course, he happens to be specially skilled in any of them. In passing I would stress the desirability of attaching the original specialist reports to the main document. I have sometimes seen a *précis* of an un-named specialist's report incorporated in the surveyor's report, and I consider it to be a most dangerous practice.

It is of paramount importance when accepting instructions to ascertain the purpose for which the survey is required. This is particularly so where a possible conversion is contemplated, in which case it is useful to try to find out from the client the ideas he has in his mind as it may be that his proposals cannot be implemented on constructional and/or legal grounds. It is also wise to state in the preamble to the report the purpose and scope of the instructions.

Having obtained some knowledge of what is required of him, the surveyor has to make up his mind as to whether he or his staff possess the skill and experience required to render the full and proper service which is demanded by the particular case. In a structural survey it is experience that counts a great deal more than text-book knowledge, and unless that experience has been gained over the years to equip a man to undertake a particular commission he cannot conscientiously hold himself out as being specially skilled for that particular case, and he would be well advised both ethically and legally not to accept instructions. I have found from experience that in some, in fact too many, offices in which small surveys are undertaken they are regarded as something of a nuisance carrying only a small fee, and are, therefore, delegated to a junior assistant. However small the property may be and whatever the fee, the client is entitled to expect the same degree of skill and experience as is required to report upon a mansion and if he suffers damage because that skill has not been exercised the Courts will protect him.

Danger of Guessing

It not infrequently happens that a client, having received his report, will ask for an expression of opinion upon the cost of remedying some or all of the defects mentioned therein. Such a request is a perfectly legitimate one, and to the lay mind one with which there should be no difficulty in complying. To an experienced surveyor, however, the reverse is often the case, as he knows that whatever estimate of cost is given and however approximately, the client may, and probably will, rely upon it in his financial calculations. There will usually be items that present little difficulty and which can be priced fairly accurately, but others, such as underpinning or timber pest eradication, very often, and particularly at this stage, cannot even be measured, let alone costed. In such cases the client should be told that no opinion can be formed from the data then available, and by way of emphasis he can be reminded that no responsible building contractor will normally tender for such work in the absence of a bill of quantities or at least a detailed speci-

fication with such drawings as may be requisite The danger of guessing at costs is obvious, no matter what safeguards may be adopted.

A potential and somewhat common source of trouble is in offering gratuitous advice quite outside the scope of the instructions. I have in mind several cases which have come to my notice, in all of which opinion upon value has been expressed in the course of a purely structural report. I am completely at a loss to understand the reason that promotes such lack of wisdom. The fact remains, however, that, gratuitous or otherwise, if an estimate of value is included in a report, the surveyor must stand by it even though he has no valuation experience, has received no fee for it and was only trying to be helpful.

I would like to refer briefly to the surveyor who is unfortunate enough to find himself faced with an action for damages for negligence, and I would hasten to add that in this respect at least I am not speaking from experience, at any rate up to the present. If the case against him is good and he has made a bad mistake, it is surely unwise to attempt to defend an action and suffer the publicity involved. It may be far better to settle upon the best terms possible, even though he may be insured and the underwriters be inclined to fight. The holding of an indemnity policy is a necessary precaution we all should take, but it should never be the cause of temptation to run risks in any sense, and it should not be overlooked that under most policies the insurers can force the insured to contest an action, and even though they may pay the damages the loss to the insured in reputation cannot be measured. There are circumstances in which the allegations may be ill-founded or even untrue, and in which the action must be defended. In coming into the witness box in his own defence the surest and most powerful weapon in the surveyor's armoury is his original notebook. If it is, as it should be, a complete representation of the facts as they were found at the inspection together with notes of the inferences he has drawn, the Court can see the care and skill which were exercised and can form a clear picture of the state of the property as it was at the time. If the notes are full and clear, the book, together with the report, which is merely an amplification of the notes, will be likely to carry more weight than any amount of opinion subsequently expressed.

THE BUILDING INDUSTRY AND SCIENCE

Sir Ben Lockspeiser on Need for Regional Technical Groups

OPENING a conference on research held by the National Federation of Building Trades Employers in London, on March 17, SIR BEN LOCKSPEISER, secretary of the Department of Scientific and Industrial Research, said that the results of research speedily find their way into industry under compulsion from necessity. An aeroplane, to be worth building, must be scientifically right. Television had come straight out of the laboratory, and the electronic industry spent much of its time making for the home scientific apparatus far more complex than scientists themselves used in their laboratories only a few years ago.

"But," continued Sir Ben, "there are industries under no such compulsion. Farmers can grow food and houses can be built without bothering about science. Individuals in these and other industries founded on experience and craft tradition vary, of course, a good deal in their attitude towards science. Some do in fact go out and search for it, but most do not. It has to be taken to them. The scientist has an obvious duty in communication which he attempts to do by publication in the scientific, technical and trade Press, through pamphlets and by the staging of trials and exhibitions.

"This is not made any easier by the absence, for builders, of a recognised and organised forum for discussion such as exists for your professional colleagues. The scientist is forthcoming in the matter of inquiries. The Building Research Station, for example, runs an inquiry service which now deals with some 6,000 written inquiries every year, a large number of telephone inquiries and personal visits. In addition, the Regional Technical Information Officers and the Regional Joint Committees of the Ministry of Works make their own contribution. The results of building research influence by-laws and codes of practice. Recently there have been issued new model by-laws which are considerably less restrictive than those they are replacing. These changes have come from research and the greater flexibility of the new by-laws will facilitate the application of its results and of new developments in building.

"I do not believe we can solve the problem of the wider and speedier application of science by an extension of intensification of effort on these lines alone. In my view something vital needs to be generated within industry itself, to change mental attitudes and replace customs and habits that belong to the past. I imagine that builders would be far readier to listen to those within their own trade than to outsiders like scientists. And I imagine, too, that you must have a sufficient number of people in most regions who are well aware of the need for technical advance, and possessed also with a strong desire to progress, to enable you to set up regional technical groups of your own. As for the scientist, he would be far better employed, and far happier too, in supplying information in bulk to the groups than in retailing information in penny packets.

"I understand that one or two of your Regional Federations have already set up some form of machinery to help members on technical problems. I, personally, welcome these ventures wholeheartedly because they are so clearly on the right lines and spring from your own convictions. The building industry has, of course, special problems because it has to apply research on a building site and not in a factory, and the different trades have to move in succession past the work instead of the work moving to the operative as in production engineering.

Co-operation on Trials

"Science has a good deal to say on matters of industrial operations through the techniques it has developed in operational research, but its voice would be all the stronger and subsequent action far more effective if investigations of this kind were sponsored and organised by a regional technical group of your own. Very much the same considerations apply to large-scale trials which sooner or later are required in the course of any considerable development. The research scientist can often arrange for such trials with individual research-minded builders, but it would be to everyone's advantage if wider and more systematic channels could be provided so that several firms could co-operate with the research workers in some particular development. Practical difficulties are more likely to be brought to the surface and overcome by varied experience than through a single trial. For example, the Building Research Station and the Forest Products Research Laboratory have recently developed a method of treating brickwork or masonry with a zinc oxychloride plaster or paint to stop the spread of dry rot fungus from infected walls to new timber. Some full-scale trials have been started, but larger and more varied effort is needed.

"Similar considerations arise in the use of machinery which, together with the exploitation of new building and sub-assembly techniques, offers perhaps the most direct means of speeding up and cheapening building operations. But the use of machinery presents problems in economics and organisation which have to be solved before any significant advance can be expected from the small and medium-sized builder. It would not be impossible to devise and operate a regional service to enable machinery to be used co-operatively and economically," added the speaker. "The problem has been tackled on a regional basis in agriculture, and the agricultural worker has taken to machinery readily enough. Here, I suggest, is a ready-made task for the regional technical group.

"The applied scientist by himself cannot achieve much, but operating with and through industry can increase its power and produce changes for betterment. The work on building machinery has been aided and stimulated by the practical advice and co-operation of a small technical group of builders and plant manufacturers, and am I wrong to point to this example as a functional model of what I have in mind in proposing the formation of regional technical groups?

Preliminary Problems

"I doubt whether the shape of your industry is as conducive as it could be to the use of science and scientific methods. The central problem which the building industry has to face is its own organisation. Large numbers of small firms will always be needed for small jobs, but might it not be better if more of the smaller firms specialised in particular types of sub-contracting work? There are already, of course, many small specialised sub-contractors for plastering, painting, plumbing, tiling and so on, but does not this need further extension? And does not the building industry need more men who can influence design in the interest of better production, who specialise in detailed planning and programming of building jobs and on the best methods for carrying out the work? And might not such men become an invaluable link between the design and erection functions of research in building operations? These are to my mind the kind of problems which need to be considered and dealt with before research can be given a proper chance to get to work, and before you can reasonably expect it to operate decisively in your favour."

The Conference, called by the National Federation, was attended by representatives of the ten regions. In addition to Sir Ben Lockspeiser, Dr. F. M. Lea (Director BRS) was present.

SOME ASPECTS OF BUILDING CONTRACTS—2

By NORMAN P. GREIG, BA, Barrister-at-Law, FIArb, FRSanI

THE purpose of a building contract is to express, in definite terms, an agreement made between a building owner or employer and a contractor, under which the latter undertakes to do building work or work of the nature of building, either to the satisfaction of the employer himself or his architect as agent, and for an agreed sum which is either to be definite (a lump sum price) or based upon an agreed contract sum, or by some other method of computation decided upon. The agreement itself will, in most cases, be accompanied by conditions which are to be complied with during the progress of the work; both the agreement and conditions being "contract documents," a term which varies according to the kind of contract, and can contain the quantities, or a specification (or both). (The Ministry of Works Form, CCC/Wks/1, includes the documents forming the tender and acceptance.) In construing such a contract, the whole of the contract documents must be examined.

But formal building contracts attempt to do more than that—they try to define (with more or less completeness) the relationship between all those who are in any way connected with the building work: employer, contractor, architect, surveyor, clerk of works, nominated sub-contractors, suppliers and so on. It follows then that a contract, loosely drawn, can often produce difficulties and misunderstandings that could easily have been avoided by taking more care in drafting it. The result is the work suffers. The building contract should not, as many other contracts are (for instance a fire insurance policy) be merely glanced at, incompletely understood, and filed away until something happens—only to find that that happening has not been provided for under the particular contract.

A Complete Code

The builder is often inclined (and so are other parties) to regard his contract as "something behind him," which can be referred to should a difficulty or dispute arise. Actually, it should be regarded as a complete code to be rigidly adhered to in the carrying out of the particular work. The architect, on his part, sometimes claims powers and duties which are not his at all under the contract—often he is following some custom or procedure generally recognised in his profession.

Let it be said that the builder who does not closely examine the contract documents before signing them is blameworthy. Comments have frequently been made in court hearings on the effect of some building contracts, like that of eminent counsel in regard to the 1909 RIBA Form. "The position of the builder under a contract of this kind is so bad that I have often wondered how any man can allow himself to sign such an agreement." One answer probably is that a builder sometimes signs an unsatisfactory contract to get work and keep his employees engaged instead of standing them off, and hopes for the best.

During the *Thorn v. London Corporation* [1876] case, when the contractor sued for extra expense caused him by relying upon a specification that he afterwards claimed was faulty, Lord Chelmsford observed, "The builder, *before he made his tender*, ought to have informed himself of all the particulars connected with the work, and especially as to the practicability of executing every part of the work contained in the specification"—adding, later, "It is said that it is the usage of contractors to rely upon the specification and not to examine it particularly for themselves. If so, it is a usage of blind confidence of the most unreasonable description." (This case, by the way, is authority for the principle that the architect does not warrant his specification—or his plans, for that matter—at least to any further extent than that, as it is the work of a trained man using reasonable care and skill, it is generally to be relied upon). It has been suggested that a clause should be inserted in the building contract warning the contractor to examine all the documents forming part of the contract before signing the agreement.

One of the main objects of the building contract, then, should be to establish the relation between, not only the parties, but others engaged, and to provide protection at the outset to all of them, and to each of them in proportion as he is more or less likely to be affected by a branch of the contract.

It is generally accepted that the RIBA Standard Forms are drawn up to do just this, among other things, and this view was endorsed by the Working Party in their report. It also calls attention to a noticeable feature of them, namely, that the Joint Contracts Tribunal (and this body includes a surveyor, while the Standard Form itself claims the sponsorship of the RIBA and the NFBTE only) attempts by Practice Notes to shed light upon points of doubt and difficulty. Is there anything, or much, in the suggestion that an even more perfect form than the existing one might have resulted from including the RICS, as a sort of godfather, along with the legitimate parents? It is interesting to recall, in this connection, that the 1928 Standard Form of Contract was one prepared and approved for adoption by the RIBA, the Royal Institution of Chartered Surveyors, the Institute of Builders, and the National Federation, and this Form was eventually deemed unsatisfactory by the RIBA, dropped out of use, and was replaced by the 1931 Form, which, as amended, is the current one.

But it is not the contract itself that will necessarily produce the satisfactory building job to be arrived at. The RIBA, in a Memorandum issued accompanying the 1931 Form, observed that the successful termination of an undertaking depends more upon a mutual confidence and understanding of the parties concerned than upon any form of words in a contract. (Most people would agree if the words "as much" were substituted for "more.") Let the contract, then, contain the outlines of a proper relationship, and let the parties do their best to carry it out.

Variations of Contract Form

The RIBA Forms are not, however, to be regarded as unalterable, like the laws of the Medes and Persians. They can be subjected (under particular circumstances) to amendments, additions and alterations to suit certain requirements. Witnesses before the Working Party on Building complained (in the case of the "Local Authorities" RIBA Form) that many of these amendments were needless and, in some cases, even tended to increase prices (See Working Party Report, § 102). Apart from that, there are certain inherent dangers resulting from carelessly thought out alterations and amendments of any recognised form. In the first place, after due consideration, the alteration, etc., should be initialled or signed by the parties. Again, if such alteration affects the trend, or adds something to the meaning of a clause, it will have more consideration than the printed words, because specially agreed to by the parties as amending the formula of the printed form. Lastly, great care should be taken to make sure that by altering, etc., one clause, the balance of others has not been upset, and the whole thrown out of gear.

Here, again, is a procedure that can lead to trouble during the building job. It should be remembered that the final tribunal for the construing of a building contract is the Courts (though the Arbitration Clause of the RIBA Standard Form includes submission to arbitration of a dispute concerning the construction of the contract. The effect of this is that an award of the arbitrator on a point of construction may be attacked later in the Courts on the ground of "error in law on the face of it," and many disputes will most likely concern a question of law).

In regard to this matter of variation of a standard form of contract, the Working Party's Report (referring to the Local Authorities' Form) makes the following valuable suggestion that could be applied to other forms: If the form be not wholly satisfactory for the particular purpose for which it is to be used, any variations should be included in a separate list attached to the form, in order to be easily and clearly identified by the tenderer.

Improving Relations on the Site

It is well known to all in the building industry that a certain lack of sympathy and understanding is often present in a building job, particularly between architect, surveyor and contractor; the latter seems convinced that the surveyor is his "hereditary enemy," and both regard the architect as an autocrat and dictator, or worse. The architect, too, may regard the surveyor as the person to take off the quantities and measure and value variations, and that is all. Such a state of affairs can hardly lead to mutual confidence and understanding. Provided that each person concerned is doing his own job "according to the book" and hence has no reason to suspect any other party, this unfortunate state of affairs should not exist, nor, as a result, should the work suffer, as it is bound to. The architect, as the agent of the employer, has no more authority under the building contract than the employer has, for no principal can authorise an agent to assume greater powers than he himself possesses. And the fact that the architect, as agent of the employer (and under his personal contract with the employer), is under a particular duty to safeguard the employer's interests is not to say that, when acting as a "quasi-arbitrator" under the building contract, he must forget that it is his business to act judicially, when so doing, and hold the scales evenly between his principal and the contractor.

But it is undoubtedly true that architects, surveyors, and contractors do not always act in harmony. If it is true to say that there is a smouldering of an eventual flame to be detected in schools of building between

these parties, then would it not be possible to bring them into closer contact with one another during their training? To some extent, for instance, the initial instruction of architect and surveyor runs on parallel lines; would it not be possible to take common classes up to the point of divergence, and so lay the seed of a better understanding later? It is easy, perhaps, to say that the size of such a class would, of itself, make such a scheme not feasible. But that, surely, is a difficulty that can be surmounted.

(To be continued)

*** Since the above was written, an invitation has been made to the RICS to become one of the sponsors of the RIBA Form of Contract.

RENOVATION AND MAINTENANCE OF BUILDINGS

Notes Prepared by Building Research Station

NOTES in the form of answers to specific inquiries received from members of the industry, are given in Building Research Station Digest No. 51 * which was recently issued. The subjects dealt with are of widespread interest and we, therefore, reproduce the following notes in their entirety:

Renovation of Buildings

Question: An architect asked for advice on the cleaning and renovation of several buildings in time for the Coronation.

Answer: (In view of the large amount of work of this kind that is likely during the early months of the year, the reply given to the particular inquiry has been extended to cover all the main aspects of this kind of work.)

So wide a subject can obviously be dealt with only by way of reference to recent publications, with the addition of a brief summary wherever there is no publication available or where the relevant publication would be difficult to obtain.

The reply is given under four headings:—cleaning, repointing, repairs and painting.

Cleaning.—The cleaning of stone, brick or concrete buildings should be entrusted to an experienced firm under a guarantee that no caustic soda, washing soda, soda ash, household scouring-powder or other cleaning agent harmful to building materials will be used.

The cleaning of stonework is discussed in Digests Nos. 20 and 21.

Limestone, concrete and the softer kinds of brick can be cleaned with steam or fine sprays of water aided by the use of stiff brushes. Soot-blackened sandstones and granites often present more difficulty, and it may then be justifiable to scour with an abrasive or to make use of a solution of ammonium bifluoride or hydrofluoric acid if a trial shows that it is materially helpful. Such solutions must be handled with the utmost care, and only by experienced operatives.

Efflorescent salts should be removed by brushing with a dry brush, followed by washing with water; this process needs to be repeated so long as salts reappear as the surface dries.

Algae and lichens are apt to grow on damp surfaces, especially those shielded from direct sunshine. Their removal is discussed in Digest No. 47

Repointing.—The most important part of the operation of repointing is preparation. The mortar joints should be raked out squarely to a depth of ½ in. before new mortar is applied. The squareness of the groove into which the mortar goes is more important than its depth—a V-groove does not give the new mortar any key to hold it in position against the thrusts resulting from freezing and the crystallisation of soluble salts, and may not even prevent the pointing mortar breaking away as a result of shrinkage on drying out.

The mortar mix should be chosen to be comparable in strength with the mortar in the rest of the wall, provided that this mix has adequate frost resistance. A 1:1:6 cement:lime:sand mix is considered to have adequate frost resistance in most circumstances; a 1:2:9 mix is likely to be satisfactory in the milder parts of the country. These mixes may, however, be found difficult to handle unless the lime is a good fat lime and the sand of a good working quality. With other limes and aggregates, a richer mix, say 1:1:5 or 1:2:7, may be required to enable the work to be done expeditiously.

Repair of cracks.—Major repairs will obviously be out of the question in a short-term freshening-up of buildings. However, some local repair to stonework might be envisaged; material and technique are discussed in Digests Nos. 20 and 21. Otherwise, attention will be focused mainly on the elimination of cracks.

On fair-face brickwork and masonry there is much to be said for leaving cracks untouched; where the bricks or blocks are themselves cracked, nothing short of replacement will make an effective repair, and removal of the individual cracked bricks or blocks may damage the surrounding masonry. Moreover, the new mortar used in replacement is unlikely to match the old mortar, at least until it has weathered for some time, and then only if it has been chosen with this end in view.

Cracks in renderings are also best left alone unless they are causing internal dampness or the surface is subsequently to be decorated. For the repair of large cracks, either the filler should be a mastic, or an attempt should be made to provide an undercut key to hold a rigid filling in place. The line of mastic will be likely to grin through any subsequent decorative coating; the rigid filling, if similar in texture to the original rendering, can be obscured by cement paint or colour-wash, but the crack, if caused by a recurrent thermal or structural movement, will reappear in course of time. Fine cracks can be filled in with cement paint or other colourwash when redecorating.

Oil-painted stucco presents a rather more difficult problem, owing partly to the sensitivity of paint to attack by alkali and partly to the risk of entrapping moisture behind the impervious skin. Trials made on some London buildings suggest that the rendering itself can be repaired with a 1:2:8 cement:lime:sand mix applied to a well-keyed surface. Painting should be left until the repaired patches are dry, and the oil paint should be preceded by two coats of an alkali-resistant primer. Alternatively, a similar mix of high almumina cement, ground chalk and sand can be substituted for the one recommended above, in which case an alkali-resistant primer is not required.

A number of references relevant to the repair of rendered surfaces are given below:—

1. "The Maintenance and Repair of Regency Painted Stucco Finishes," by G. E. Bessey, RIBA Journal, February, 1950.

2. National Building Studies Bulletin No. 10 "External Rendered Finishes for Walls" (HMSO, 1s. 9d.).

3. MoW Advisory Leaflet No. 27 "Rendering Outside Walls" (HMSO, 3d.).

4. Digest No. 41 "Treatment of Damp Walls" (HMSO, 3d.).

Repainting and Colourwashing.—The painting and colourwashing of wall surfaces is discussed in Digest No. 17 "Colourwashes (Including Paints) on External Walls." The most important points made are (i) preparation of the surface and (ii) the choice of a new decorative coating that is compatible with the existing surface.

Of the materials requiring special treatment, asbestos cement is discussed in Digest No. 38, bituminous surfaces in Digest No. 43 and woodwork in Digest No. 30. There are corresponding MoW Advisory Leaflets summarising two of these:—"Painting Woodwork" No. 25, and "Painting Asbestos Cement" No. 28.

The painting of metal surfaces is dealt with at length in British Standard Code of Practice No. 231 (1952) "Painting" (British Standards Institution, 10s. 0d.). In this, as in other painting operations, correct preparation of the surface is essential; this aspect is discussed in MoW Advisory leaflet No. 11. If the instructions in this pamphlet are followed carefully, the various paints are obtained from one manufacturer so as to ensure compatibility, and the surface is clean and dry when they are applied, good results will follow.

Deterioration of Roofing Tiles

Question: We are sending under separate cover two samples of some hand-made sand-faced clay tiles that were fixed on a roof in 1928.

The roof, whose pitch was about 40 degrees, was battened but not boarded or felted, and in our experience we have found that the useful life of hand-made sand-faced tiles in these conditions is appreciably longer. You will notice that the nibs have decayed, leaving a white powdery deposit, and we should like to have your report as to the reason why the tiles have deteriorated in this way.

Answer: The white powder on the sample tiles is an efflorescence of soluble salts. Water absorbed by the externally exposed surfaces of the tiles moves up the tiles by capillarity and evaporates into the roof space. Any soluble salts present in the tiles are taken into solution and redeposited in the neighbourhood of the nibs.

Occasionally it happens that the salts crystallise within the surface of the tile, and some erosion may then occur.

No treatment that will arrest the process is known. If eventually the nibs become eroded away some tiles may be displaced; if only a few tiles are so badly affected, they may be replaced individually by new ones,

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otherwise the roof will need retiling. Well-burnt clay tiles do not suffer from this defect.

Frost Failure of Mortar

Question: *It has been found that brickwork built in a* 1:2:9 *cement:lime:mortar has been seriously damaged by the slight frost which occurred on Sunday night, December* 2. *The damage extends to work carried out two months previously, and we would ask you if this is what might be expected with a mortar of this type. We are assured that the lime and cement were in fresh condition.*

We shall be glad of your advice on what further precautions may be taken for the remainder of the work without making an obvious change in the colour of the joint. We would mention that the work is being pointed as it proceeds, in the same mortar as is used for bedding.

Answer: All mortars can be damaged by frost in their early life and for that reason new brickwork should be covered if frosts are likely. Mortars that become strong quickly become resistant to frost correspondingly earlier, but some mortars may never become really frost resistant. It is for these reasons that the Station, while favouring lime-rich mixes for normal weather conditions, except in parapets, below the damp-proof course and in free-standing walls, recommends the use of a rather stronger mix, say, one in the proportions 1:1:6 for general brickwork built during the autumn and winter when exposure conditions are more severe.

It is probable that the onset of frosty weather this winter will result in a greater incidence of frost failures of brickwork built with weak mortars, owing to the unusually wet autumn.

Ministry of Works Advisory Leaflet No. 8 briefly discusses the matter and describes the precautions to take when bricklaying in cold weather. For further information reference should be made to National Building Studies Bulletin No. 3, "Concreting and Bricklaying in Cold Weather," and Bulletin No. 8, "Mortar for Brickwork, Block Construction and Masonry," which may be obtained from HM Stationery Office, York House, Kingsway, WC2, price 6d. and 1s, 0d. net respectively, 7d. and 1s. 2d., including postage.

Failure of a Plastered Ceiling

Question: *We are enclosing a section of plaster from a ceiling that recently fell in a house. As we have had a number of ceilings of this type (i.e., lathed, rendered, floated and set in lime plaster) prove defective, we shall be obliged if you could let us know what in your opinion is the cause of the defect.*

The enclosed sample is from a ceiling that was plastered 12 *to* 14 *months ago: New sawn lathing was used and the coarse stuff was obtained ready mixed from a supplier with whom we have been dealing for some time, and additional hair was mixed in by us.*

It would appear that the hair embodied in the plaster has little or no strength, and in fact in previous cases it was found that it had almost completely disappeared. It is our opinion that in all probability a chemical reaction occurs between the wet plaster and the hair which we think is chemically treated by a comparatively new process when it is stripped from the hides.

Answer: Failures of ungauged lime plaster ceilings are one of the most common troubles in buildings, and in most of them the collapse has happened because keys are broken whilst the plaster is still green. Nowadays other trades are operating at the same time as the plasterer or immediately following him, and it is difficult to ensure freedom from vibration for a long enough time for the lime plastering to become sufficiently strong to resist vibrations and shocks from other trades.

Lime plaster hardens only very slowly by combining with carbon dioxide from the air and may take months to become as strong as a gauged mix is after a few days. Collapse may occur soon after the ceiling is finished or, as in this case, some time later, depending on the proportion of the keys that were broken early on. If only a few keys are broken initially any subsequent vibration or shock such as that caused by the moving of furniture may break a few more keys until, finally, the ceiling falls.

All lime plaster undercoats for lathing should be gauged with either calcium sulphate plaster or Portland cement, in order to ensure early strength. Suitable mixes are described in Building Standard Code of Practice 211 "Plastering."

The sample submitted appears to be of reasonably good quality as a mix although the hair is rather brittle. It is true that hair removed from hides by some of the newer processes may be weakened and less suitable for plastering, but it is doubtful, however, whether hair of better quality would have eliminated risk of a failure in the present instance.

Sound Insulation of a Party Wall

Question: *I am anxious to ascertain if it is possible to eliminate noises made by next-door neighbours, particularly from a piano backing a party wall.*

Answer: There is no simple method of providing an effective sound barrier in an existing building, especially against a piano which produces both air-borne and structure-borne sounds.

The problem is primarily one of planning coupled with structural precautions such as those discussed in Digests Nos. 2 and 15.

These precautions in the design and construction of a new building should produce satisfactory results, but they are not usually considered economical in existing buildings, nor in many instances are they practicable. Some very slight improvement in the sound insulation of a party wall may be brought about by using a lining of 1-in. wood-wool slabs attached by means of felt-lined clips to battens fastened to the wall, the room face of the slabs being plastered and decorated in the usual way. It may be found necessary, however, to apply the same treatment to the flanking walls, because much noise is transmitted along these walls. If this is needed (and the need can only be determined by trial), the cost is likely to be high in relation to the results achieved.

Some improvement would probably result if your neighbour could be persuaded to move the piano to another part of the room and, if possible, to stand it on a thick sheet of plywood, resting on an underfelt.

It must be emphasised that such precautions can, however, only serve to lessen the sound penetration without entirely eliminating it.

Dampness in Buildings

The third bulletin issued recently by the London Master Builders' Association Technical Information Service is concerned with problems arising from dampness.

SPECIALISTS AND THE ROBERTSON COMMITTEE

Mr. Eccles' Views on Participation

SPEAKING at the combined annual dinner and dance of the Institute of Plumbers and the National Federation of Plumbers and Domestic Engineers, which was held at the Park Lane Hotel, London, on March 11, MR. DAVID ECCLES, Minister of Works, expressed the hope that the views of the specialists would be heard by Mr. Howard Robertson's Committee of Review. He also referred to freedom as the most vital of all building materials, and he thought it was as important to increase its supply as it was to get more bricks or cement or steel pipes.

"The supply of building materials is now steadily expanding," he said, "because price controls have gone, because local authorities have seized the freedom to step up house-building, and because the free limits for repairs have been raised and it is easier for builders to organise a steady flow of work."

Since the present Government had been in office, he said, a month had been knocked off the average time taken to build a council house. But it was not the Government who built quicker, it was the building industry to whom the credit was due.

"If you could cut the time taken to build a house by another month," he said, "then 300,000 houses a year would be in the bag and we could make headway with that programme of overdue repairs and of slum clearance which we all want to tackle."

Referring to the reconditioning of old buildings, Mr. Eccles said he very much hoped that more applications would be made and be granted for reconditioning grants. Coming from the rural areas himself, he said he had had some experience of reconditioning. It deserved to be pushed wherever the structure of the house warranted it. The solid old cottage with its well-made garden had great possibilities if only a bath and lavatory and a new hot water system could be added and one or two structural improvements made.

"Your Federation," he said, "might do worse than look into ways and means of encouraging the owners of cottages in need of reconditioning to take advantage of the grant and do the job."

Encouraging Exports

Mr. Eccles said he was anxious that Canadians and Americans should buy prefabricated buildings and prefabricated equipment from Britain, and he had hoped that a few orders paid for in dollars might come from the U.S. Forces in Europe. "If we can give satisfaction to them," he said, "then a large number of export orders might result."

In proposing the toast of Her Majesty's Government, to which Mr. Eccles was replying, MR. J. L. MOFFETT, president, National Federation of Plumbers and Domestic Engineers, referred to the committee set up by Mr. Howard Robertson, at the request of the Minister, for promoting measures to reduce costs and review contracting arrangements. He said that they hoped they would be able to play their part in such an inquiry, but he was sorry that they had not yet been asked to do so.

In his reply, MR. ECCLES said he was most anxious that the building industry should conduct the inquiry itself without any interference from the Government, but he was sure that the views of the specialists should be heard. Whatever happened he hoped it would be a family party and not develop into a sparring match.

LMBA

Lowering Building Costs

OPENING an exhibition at the South-East London Technical College on March 10, MR. GERALD HILL, president of the LMBA, said that the exhibition was a particularly important one. "Amongst the exhibits you will see mechanical tools which may help us to solve a problem that has been troubling us for some time past," he said. "It is the problem of trying to find ways and means of reducing building costs. It is difficult enough to resist the rising cost of labour, and still more difficult to control the cost of materials, and so we have to look for other means to help us. It has been thought for some time that the greater use of small-powered tools and machinery cannot fail to help us by speeding up production, and if we can do this, building costs are bound to fall.

"There is a very great deal for us to learn by a visit to this exhibition, and I commend it to everyone in the industry, hoping particularly that employers in this neighbourhood will find time to come in and see what is on display. There will be people here who will answer questions, and will give further information, and my Association is very happy indeed to give this exhibition its blessing."

The Apprentice Masters Roll

SPEAKING of the need for more apprentices in London at a luncheon in his honour given by Central Area No. 3, the president of the LMBA, MR. GERALD HILL, referred to the roll of apprentice masters which the LMBA has started. Mr. F. Luker, chairman of the Area, presided.

Every member, said Mr. Hill, whose work justified the training of apprentices—and there were very few who did not come into that category—should take his full quota of apprentices. "The apprentice master should be proud of the fact that he is fulfilling his duty to his craft, and I should like to see the letters 'AM' used by builders as a trade mark in the same way that those whose academic qualifications justify it use the letters 'MA.'

"And it is not only the big man we are after," Mr. Hill continued. "It is the small man as well. For there are very few firms which cannot take at least one apprentice in each of the trades they cover. And remember, one apprentice qualifies you for admission to the LMBA roll of apprentice masters.

"We need more apprentices in London, and we need them desperately—in our own interests, and in the interests of the industry and in the interests of the country."

Donation to BBI

THE LMBA has sent a donation of 25 guineas to the Builders' Benevolent Institution, of which Mr. R. E. McAlpine is this year's president.

The BBI annual dinner takes place on March 31 at Grosvenor House.

Appeal to take Apprentices

As a considerable number of boys in London will be leaving school at the end of the month, the LMBA has circularised its members asking them to make a special effort to accept one or more boys for craft training. A particular appeal is made to those members who have not in the past accepted apprentices to add their names to the Roll of Apprentice Masters and to take on at least one boy.

All vacancies for apprentices will be notified to youth employment officers and to principals of building schools, to assist them in placing the boys.

SHEFFIELD BUILDERS' ASSOCIATION

National President at Annual Dinner

ADDRESSING 400 members and guests of the Sheffield Building Trades Employers' Association at their annual dinner and dance at Sheffield on March 11, MR. WILFRID HORSFALL, National president, gave a warning that the position with regard to supplies of building materials was still serious, and said that Ministers of the Government were unduly optimistic.

"We look with some apprehension to whether supplies of bricks will meet the demand this year," he said. "Demands on the services of the building industry are likely to be heavy during the coming months.

"Builders are doing all they can to ease the position by ordering in advance, but in doing this there is obviously a limit beyond which they cannot go. In governmental circles there is a degree of confidence on the question of brick supplies which is not supported by the experience of builders on the sites, where output is suffering.

"So long as the current position continues, and I may say that it has continued for the greater part of the post-war period in relation to one building material or another, any attempt to compare building productivity with that of other industries can be of no more than academic interest."

Mr. Horsfall, who was replying to the toast of the National Federation, paid tribute to the "wide-awake" Sheffield Association, one of the two biggest in Yorkshire, and to the work done at national level for the Federation by two Sheffield members, Mr. Walter Forsdike, CBE, chairman of the National Joint Council, and Mr. Reeves Charlesworth, a member of the national executive, both of whom were present.

The toast had been proposed by MR. J. N. HANCOCK, president of the Sheffield Association, who said they were proud that the new National President was a Yorkshireman.

Danger of Bottlenecks

"The building industry faces a terrific programme of work at the present time, and is likely to do so for many years to come," said Mr. Hancock. "Our reserves of men and materials are strained to the limit, and such conditions are not completely happy. We are in a state of careful balance. It is a time when we can as easily produce bottlenecks as houses, although individual builders are well known for their capability for clearing bottlenecks!

"There is a great deal to be done if this building industry is to go on smoothly," Mr. Hancock continued. "A big programme can be met only by increasing our capabilities. I am sure the whole thing can be stepped up till we satisfy the needs of this country. The industry was never more essential to this country, and the National Federation was never so vital to the industry as it is to-day."

Mr. J. W. Marlow, senior vice-president of the Sheffield Association, proposed a toast to the guests, who included Mr. A. W. Birch, president of the Yorkshire Federation, who responded.

SERVICE TO BUILDING

Presentation to Major Shingleton

AT the monthly meeting of Central Area No. 1 of the London Master Builders' Association held at Kensington on March 11, tributes were paid to the services rendered to the industry and the Association by Major Leslie Shingleton, OBE, past-president of the LMBA and for many years managing director of Leslie and Co., Ltd., of Kensington, who is shortly retiring to live in the country. Major Shingleton was prevented from attending the meeting owing to illness. Mr. A. A. Thorne, MIOB, presided.

Among those present to join in the tribute were members who served on the Council in 1937 at the time of Major Shingleton's presidency—Messrs. H. B. Kerr (president, 1940), P. Smallwood (president, 1947), and Gilbert Russell. Also present was Mr. H. J. Falkus, who succeeded Major Shingleton on the LMBA Apprenticeship Committee.

In his recollections of Major Shingleton's activities, MR. RUSSELL recalled that his firm had been elected members of the LMBA in 1911 and that his father, Mr. Frederick Shingleton, MVO, FIOB, had been president of the Association in 1918. MR. KERR paid particular tribute to the services which had been rendered to the country by Major Shingleton during the war when his experience and energy had been directed to the emergency organisations for the defence of London and for dealing with air-raid damage. Tribute was also paid to Major Shingleton for the great interest which he had always taken in apprenticeship and for providing recreational facilities for the boys. MR. G. H. A. HUGHES, Director of the LMBA, spoke with feeling of the long association of Major Shingleton with the LMBA headquarters and the consideration with which he had always treated the staff.

The CHAIRMAN announced that as a memento of his long membership of the Area it had been decided to present Major Shingleton with a parting gift consisting of a set of oak tables, and it was felt that this gift would be particularly appropriate inasmuch as the construction of the tables had been the work of an apprentice employed by one of the members.

"BRAINS IN BUILDING"

LMBA Director's Address to Students

SPEAKING of present-day building conditions in an address to building and architecture students at the annual prize-giving of the department at the Cambridgeshire Technical College and School of Art in Cambridge last week, MR. G. H. A. HUGHES, director of the LMBA, said that since the war we had passed through another industrial and social revolution. In these times of full employment it was no longer a question of "hands wanted." What industry wanted and must have was brains as well as hands. "It wants, in fact, a human being with an interest in his job, knowing how and why he does it," he declared. "We no longer work for people; we work with them. Of course, the team must have a captain, and there is still an urgent need for the discipline which comes from good citizenship.

"Few industries are changing more in these present years in their mood and method than building. It has become more specialised, more technical, and here I pay tribute to the work of the technical schools, which are developing the teaching of the new techniques."

INQUIRY BUREAU

Moisture Expansion of Bricks

Q.—We are wondering if you can help us with regard to the following inquiry. Our local technical school require an instrument for measuring the moisture expansion of bricks, and they believe that this is done with the aid of a .0001 dial gauge rigged up in a stand. Two steel balls are cemented, one at each end of the brick, and from a point at the base to a point on the dial gauge would vary according to moisture expansion. This could then be measured with the aid of the dial.

Can you tell us if anything like this is manufactured, or would it have to be specially assembled? L. G. F.

A.—While many technical colleges have carried this experiment out with a dial gauge rigged to an ordinary "retort stand," there is in existence standard equipment for the purpose, costing approximately £25. It is described as a "moisture movement, shrinkage apparatus, comprising a hollow pedestal to support specimens with adjustable yoke fitted dial gauge." Delivery time is quoted at six to eight weeks. H. O. D.

** The name and address of the makers of the apparatus have been forwarded to our inquirer.—ED.

Ventilation in a Shop

Q.—We re-occupied premises last May (rebuilt after a fire in December, 1950) and discovered shortly afterwards a considerable amount of dampness in the walls at the rear of the shop. This, we were told, would dry out eventually and give no further trouble. Two months later we discovered that some of our goods were spotted with damp mould. The matter was reported to the landlord and to the builders but nothing was done about it. Since then there has been increasing evidence of damp mould. The shop had to some extent been redesigned and we now have a flat roof at the rear which has a glass fixed roof light. Since the advent of cold weather this has been a continuous source of trouble due to condensation, and it has been virtually impossible to use that portion of the shop because of the continuous dripping of water over the entire area of the roof light. The shop, apart from two ventilators under the windows, has no ventilating system at all. Can this be the real cause of the trouble? We would mention that even the windows proper are not ventilated and are regularly misting over. TAFFY.

A.—A shop which it is reasonable to suppose during the night and over week-ends will not be occupied and furthermore often without heat during these periods, offers perhaps the worst condition for any new building to dry out. The architect and builder may well be correct in stating the walls will eventually dry out without any further work being carried out but I suggest that conditions could have been greatly improved. Lack of adequate ventilation would appear to be the prime cause of the excessive condensation and in consequence a continuous state of dampness, though in the case of the roof light this would appear to be incorrectly constructed.

The materials and mode of construction would of course influence the amount of condensation, in particular the insulation, if any, to the flat roof, but at this stage it must be assumed that these are satisfactory. The remedies suggested are as follows, and are reasonable requests to be made to the builder through the architect.

1. Air vents should be provided in each of the stall boards, i.e., in the floor of the window, and close to windows, thus allowing air to pass through the shop window front at pavement level through the vents in the stall board, passing over the surface of the window across the shop to the rear of the shop.

2. Air bricks should be built into the rear wall just below ceiling level. Two such air bricks should be sufficient.

3. Condensation will, from time to time, collect on the glass of a roof light and because of this, provision must be made to direct this condensed moisture to the outside. This provision should be made in the actual construction of the roof light, and if it does not exist it may be considered to be a definite fault. It is possible to make provision for directing the condensation to the outside but the method would be entirely dependent upon the type of roof light and it would not be possible to give this information without details of the roof light in question.

4. Every opportunity should be taken to assist the drying out by opening up the shop to the fresh air rather than making use of excessive heat.

The use of excessive heat within the building tends to draw the moisture inside rather than allowing to dry outwards. H. O. D.

Painting a House

Q.—The back of my house faces due south and is in full sun. About 18 months ago I painted it and the paint is now cracked and coming off. Before painting I removed all loose paint and sandpapered the remainder. I applied pink primer where the bare wood showed and applied an undercoat and top (gloss) coat of a well-advertised paint said to be suitable for exterior or interior use. Presumably either my methods or the paint I used, or both, were unsuitable for this job.

I shall have to repaint the back of the house this year. I am prepared to take considerable trouble over it if by so doing I can avoid having to repaint for several years. Could you tell me please: (a) What method to use? If you suggest stripping off all the old paint down to bare wood do you recommend a blowlamp or a paint remover? (b) What paint, and how many coats, to use? I do not expect you will be able to name a brand of paint, but perhaps you could state the specification or type of paint to get. (c) How long should the result last?

One further inquiry. Is there any type of paint for use on the walls and ceiling of the kitchen which will not be discoloured by the specks of material carried up in the hot air stream from a gas water heater? Either matt or gloss finish would do if it would stand up to repeated washing. D. J. B.

A.—From your description it would appear that the original paint film was loose and flaking before repainting, and further scraping and sandpapering would tend to weaken the key of the remaining paint to the woodwork. It is also possible that the overpainting caused stresses producing further flaking after a period of weathering. When the flaking is general, as would appear in this case, the most satisfactory procedure is to remove the entire film.

For maximum flexibility, which is desirable under these circumstances, it is advisable to use a paint specially formulated for outside work.

The term "pink primer" is a very loose definition and I would recommend a genuine lead-based primer by a reputable manufacturer.

The best time for repainting would be in the late summer when the woodwork is in a dry condition, and to burn off the paint with a blowlamp.

Rub down thoroughly (dry) and apply two thin coats of good quality patent knotting to all knots and prime with pink or white primer. The undercoat should be as recommended by the manufacturer of the "finish," and followed by two coats of good quality exterior work.

Although the paint film may be sound for a number of years, I would recommend repainting at three- or four-year intervals as being more economical in the long run. The cost of preparation and damage to the structure of the building due to water penetration would make it uneconomical to wait until the paint film breaks down before repainting.

With regard to discoloration of painted surfaces round a water heater, I would suggest a metal or porcelain shield suspended over the heater to disperse the fumes, thus making the discoloration less noticeable. A "marine quality" synthetic gloss paint—two coats on a recommended undercoat—should stand up to frequent washings. H. O. D.

Measurement of Cavity Wall

Q.—We are seeking an interpretation of Clause 27 (c) and (f) of the Standard Method of Measurement of Building Works—Bricklayer. The brickwork below floor level is billed "11-in. cavity wall in two half brick skins," the floor slab 4 in. thick on filling and hardcore bears on the 4½-in. inner skin.

The surveyor is measuring the wall as an 11-in. wall to underside of slab, a 4½-in. wall for the thickness of the slab, and an 11-in. wall above the slab.

Our contention is that the wall is described as one wall 11 in. wide and as such no deduction from the brickwork is made for the thickness of the floor slab. P. R.

A.—The construction described is not a "chased" bearing, and so Bricklayer Clause 27 (c) and (f) does not apply.

The bearing is in the nature of a sill or lintol and therefore Bricklayer Clause 2 (b) applies, and a deduction of brickwork is made where the formation exceeds 3 in. in height.

In practice, however, the 4-in. ground-floor slab described would be thicknessed out at this bearing so as to accommodate two courses of brickwork, the extra 2 in. of concrete in thicknessing would be measured, and formwork taken to the 6-in. exposed vertical edge. A 6-in. height of 11-in. cavity wall would be deducted and a similar dimension of half-brick outer casing of cavity wall added back.

If, however, to suit any specific site condition it was essential to split a course of brickwork so as to get an exact bearing for the underside of the floor slab, then I would still deduct brickwork (at 4 in. high) and give an additional lineal labour of "rough cutting" 4½ in. wide. S. W. H.

London Foremen's Secretary

Mr. F. Dryland, who for the past ten years has been secretary of the London Builders' Foremen's Association, has been elected vice-president of the Association for 1953. In his place Mr. A. Wright, of 63, Hillcross-avenue, Morden, Surrey, has been elected secretary.

TOWN PLANNING DECISIONS

House of "Austere and Unconventional" Design: Minister Allows Appeal

THE refusal of the Epsom and Ewell Borough Council, acting on behalf of the Surrey County Council, to allow the construction of an "unconventional modern-style" house on a site in Harefield-avenue, Cheam, was the subject of a recent appeal to the Minister of Housing and Local Government by Mr. R. F. Harrison.

The council had refused to grant planning consent because they considered that the austere appearance of the proposed house, and the siting of the garage, would be out of keeping with other houses in the road. Whilst they wished to encourage new styles of building, and had no desire to impose architectural design or insist upon uniformity of style, the council felt that in this particular case the proposed house was of such unusual design that it would impair the amenities of the locality. They objected, also, to the proposal to build a flat-roofed garage at an angle in front of the main elevation of the house. From the road the garage would have the appearance of a separate building, although, in fact, joined to the house, and the angle of its siting was ugly and had no precedent in the neighbourhood.

The Minister states that he has considered the representations made to him on the appeal, and has examined the submitted plans and elevations. The plan shape of the house and garage has been dictated by the narrowness of the plot, but he notes that, while it is unconventional, the garage would not project beyond the front line of the neighbouring houses and the projection of the house at the rear would be only slight. As regards the general elevational treatment, he sees no reason to think that the proposed house and garage will be injurious to the amenities of the road and he has accordingly decided to allow the appeal, and to grant permission for the erection of a dwelling-house and garage in accordance with the submitted plans and elevations.

Building Scheme Within Green Belt

THE APPEAL of Capt. J. C. Isaacs against the refusal of the Esher Urban District Council to allow him to build on 60 acres of land at Oxshott has been dismissed by the Minister of Housing and Local Government.

The council refused permission because the land was zoned as Green Belt in the county development plan, and because it was farm land forming part of a block of 200 acres which should not be disturbed. They also considered that the reasonable residential needs of the district could be met without using it.

In announcing his decision to dismiss the appeal, the Minister has added the proviso that it does not prejudice a possible further application for the development of a small part of the 60 acres which fronts on to the Leatherhead-road near existing buildings.

Protest Against Minister's Decision to Allow Industrial User in Garage

SUBJECT to the condition that additional machinery should not be installed, and that the premises should not be used for any other purpose, the Minister of Housing and Local Government has allowed an appeal against the Twickenham Borough Council's refusal to permit tool turning to be carried on in a garage at the rear of No. 239, Kingston-road, Teddington. It is understood that the planning committee are protesting to their local Member of Parliament (Sir Edward Keeling) against the Minister's action in allowing this and other similar appeals.

CODE OF PRACTICE

Central Heating By Low-Pressure Hot Water

THE Council for Codes of Practice for Buildings has now issued as a draft for comment Code 341.000, Central Heating by Low Pressure Hot Water, prepared for the council by a joint committee convened by the Institution of Mechanical Engineers and the Institution of Heating and Ventilating Engineers.

The code comprises a head-code and seven sub-codes incorporated in one document, the sub-codes having the following titles: Boilers and calorifiers; storage vessels; pipework, fittings, valves and cocks; appliances (column radiators, surface panels, convectors); unit heaters; power-driven circulating pumps for low-pressure hot-water-heating installations; and thermal insulation. The head-code, 341.300, deals with central heating by low-pressure hot water in general, whilst the sub-codes cover in detail the subjects indicated in their titles.

The code gives guidance, at all stages, on the setting up, and the maintaining in good order, of installations to provide central heating by low-pressure hot water (i.e., where the system is open to the atmosphere at one or more points). In drafting the code, the committee have assumed (a) that the design of such an installation will be entrusted to a fully qualified engineer, who will assure himself that "balance" is maintained in the system; and (b) that the execution of the work will be carried out under qualified supervision.

The code is in draft form, and is subject to amendment in the light of comments received, which should be submitted by April 15 next. During the present abnormal conditions, it may not be possible to carry out all the recommendations. Copies may be obtained from the British Standards Institution, 24-28, Victoria-street, London, SW1, price 15s., post free

PROPER USE OF LEAD

Technical Information Available

A FUND of technical information collected over the past 15 years is being made available by the Lead Industries Development Council. Up to 1940 the Council had already made a wide distribution of information sheets and booklets. Since 1945 a new set of information sheets, a handbook for plumbers, and various booklets on special subjects have been produced, and these are providing up-to-date reference to good practice in the use of lead sheet and pipe. Copies of these publications are freely available to architects, surveyors, builders, plumbers and other building technicians on application to the Council at Eagle House, Jermyn-street, London, SW1.

Particular problems in the use of lead sheet and pipe can be referred to the Lead Technical Information Bureau, which will, if necessary, arrange for a technical representative to visit sites. The Council also supplies schools with wall charts and other materials, arranges lectures and demonstrations, issues films on loan and provides funds for prizes open to national competition.

THE INSTITUTE OF BUILDING ESTIMATORS

Recent Progress

(From a Correspondent)

IN reviewing the progress of the Institute of Building Estimators since its formation in December, 1951, under the title "Institute of Estimating Surveyors," and its incorporation in May, 1952, in its present name, the most outstanding feature is in the interest shown by estimators connected with some of the most prominent building and civil engineering contractors both in this country and overseas. Undoubtedly, this is due, not only to the correspondence which appeared in *The Builder*, but also to the recommendations made by members to other estimators who in turn are now members.

Since formation, many matters have come under the keen eyes of the Council, who have worked very hard indeed in an endeavour to fulfil the aims of the Institute in as short a period as possible. Perhaps one of the most important of these matters was the question of the revision of the Standard Method of Measurement. The Institute prepared and duly forwarded detailed proposals to the appropriate sub-committee of the Royal Institution of Chartered Surveyors, and it is hoped and believed that these proposals will be found helpful and constructive.

The Council have spent some considerable time in dealing with the question of Institute examinations, and an announcement in this connection will shortly be made. A register of students who will be eligible to take the Institute examinations in 1954 and subsequent years will, it is anticipated, be opened during April of this year.

One item of considerable interest is the recent report by the Admission Committee of the Institute which contains *inter alia* information to the effect that over 600 inquiries for membership have been made. The conditions laid down for admission to direct membership are stringent and a very large percentage of applications have been refused. The Council feel that the course which is being followed in this regard is in the best interests of the Institute. It is thought that the present membership of the Institute constitutes a most experienced nucleus of what is undoubtedly a very essential professional institute, but applications from bona fide building estimators of good standing are welcomed.

In regard to publicity matters, very early on the Council decided that it would not be correct behaviour for a professional institute to circularise firms with a view to obtaining members, but, despite this, support has been forthcoming in very large measure. The Institute daily receives many queries from members and outside sources, and in the near future an Inquiry Bureau (correspondence only) operated by a technical committee appointed by the Council is to be set up at its South Kensington headquarters.

Now that the membership is fairly representative of the United Kingdom, the question of division of the Institute into regions and the appointment of regional representatives is a matter which will be arranged in the near future. Applications have also been received from estimating surveyors overseas.

The first honorary secretary of the Institute, Mr D. H. English, was regretfully compelled to resign at the end of 1952 owing to pressure of other work. The present secretary is Mr. R. G. Meredith, FCIS, of 10, Cromwell-place, South Kensington, SW7.

NEWS IN BRIEF

Annual Report

The 1951-1952 annual report of University College, London, has been published, and contains details of the various activities and functions of this institution during that period.

Architectural Teachers' Conference

A meeting of the Architectural Teachers' Conference (London Area) will take place at the RIBA, 66, Portland-place, W1, on April 25. The hon. secretary is Mr. F. G. Goodin, c/o College of Estate Management, 219, Knightsbridge, London, SW7.

Preservation of Buildings

A summary of the new and extensive powers given under the Town and Country Planning Act, 1947, with particular reference to the opportunities which the Act provides for the protection and preservation of historic buildings, is contained in a booklet which has been published by the Council for British Achaeology, of 10, Bolton-gardens, SW5.

Courses in Paperhanging

The third short course in practical paperhanging of twelve weeks' duration requiring an attendance of two hours for one evening a week will be held from April 16 until July 16 at the Brixton School of Building. Sound craftsmanship and good design are the bases of instruction, and the courses are intended for those already engaged in the painting and decorating trade, but who have had very limited experience of paperhanging.

Coronation Balconies Warning

The London County Council has issued a warning that responsibility for taking adequate precautions against overcrowding of balconies and parapets along the Coronation route rests with the owners or occupiers. The Council has advised those concerned to consult a surveyor or engineer about the need for auxiliary strutting or shoring if they were in doubt about safety. The London Builders Foremen's Association, who have issued a similar warning, said that many balconies had become unstable, possibly because of war damage or lack of maintenance.

Annual Holidays

Holiday credit stamps have been produced by the Building and Civil Engineering Holidays Scheme Management, Ltd., 2-6, Fulham-broadway, Walham Green, SW6, to inaugurate the provision of two weeks' annual holiday in 1954 for workers employed in the building and civil engineering industries. The stamps will be brought into use on April 1, and will be of two values, the 5s. 6d. value for persons over 18 years of age, and the 4s. 6d. value for those under 18 years of age.

Tree Planting

Whilst it is true that nowadays one has the advantage of a wide range of new varieties of trees, it is also true that modern development has created many new problems for the roadside tree planter. It is essential to understand all the difficulties which confront him before he can make a choice of positions and trees. These are accordingly outlined in "Roadside Tree Planting in Urban Areas," by R. G. Salter, which also gives guidance as to their solution. The price of this Bournville Village Trust handbook is 2s. 6d., and it can be obtained from the Publications Department at Bournville.

RESTRICTIONS ON TIMBER

Government Hint of Relaxation

MR. T. A. STOREY, president of the Timber Trades Federation, speaking at the federation's annual dinner at Grosvenor House, W1, on March 11, said that the timber trade urged the Government to free it from the chains which had shackled it for so long and which had so grievously affected the efficiency of the industry. While realising the problems which faced the Government, they believed those problems could best be solved by releasing the pent-up forces of enterprise and inventiveness in the trade.

SIR ARTHUR SALTER, Minister of Materials, said that it was as well to realize that the Government were not now in public trading and all forms of timber were in the hands of private trade. There was, however, a limit on the importation of hardwood from non-sterling sources.

"Until our balance of payments position is less precarious than it is now, we cannot afford the expenditure in foreign exchange which full freedom both to import and to use might involve," he said.

He hoped, however, some modifications concerning the severe restrictions might be possible.

PERSONAL COLUMN

MR. STANLEY H. MORGAN has been elected to the board of Highways Construction, Ltd., Iddlesleigh House, Caxton-street, SW1. Mr. Morgan was chairman of the Asphalt Roads Association in 1934 and 1935.

MR. W. L. HENDERSON, AMIEE, has resigned his position as assistant secretary to the Engineers' Guild Ltd., as from April 1, which post he has held since 1948, in order to take up a position in industry. The General Council of the Guild have appointed MR. J. G. ORR, MA (Cantab), to succeed Mr. Henderson. Mr. Orr, a barrister-at-law, until recently held a position with the British Motor Trade Association.

The directors of W. H. Colt (London), Ltd., have appointed MR. NORMAN P. SLADE as sales manager of the "Colterro" Lath Division which for the time being will operate from the company's head office at Surbiton.

Celotex, Ltd., the insulation and hardboard manufacturers, announce the appointment as directors of MR. A. DAWSON, ACA, the company secretary, and MR. P. W. PORTER, works manager.

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NEW COMPANIES

THE FOLLOWING NEW COMPANIES, registered in England, have been announced by Jordan and Sons, Ltd., company registration agents.

R. D. Harrison, Ltd. (515972.) Regd. Feb. 11, bldrs. and contractors, etc. Nom. cap.: £2,000. Dir.: R. C. Wilkinson, 1, William-st., Houghton-le-Spring, Co. Durham.

T. Curtis and Son, Ltd. (515977.) Regd. Feb. 11, 24a, Market-pl., Gainsborough, Lincs, plumbers, glazing contractors and genl. engrs., etc. Nom. cap.: £7,000. Dir.: F. L. Taylor, 12, Birrell-st., Gainsborough.

David Lewis and Son (Contractors), Ltd. (516997.) Regd. Feb. 12, Gendros Yard, Kings Head-rd., Fforestfach, Swansea, bldrs. and contractors, etc. Nom. cap.: £3,000. Dir.: D. Lewis, 87, Manor-rd., Manselton, Swansea.

George Argent and Co., Ltd. (516011.) Regd. Feb. 12, bldrs. and contractors. Nom. cap.: £25,000. Dirs.: C. D. L. Argent and Mrs. C. G. Argent, Swanlake, Jameston, Manorbier, Tenby.

G. Scott (Builders), Ltd. (516014.) Regd. Feb. 12, 35, Hartington-rd., W. Ealing, W.13. Nom. cap.: £5,000. Dirs.: G. Scott and Emma G. F. Scott, The Drive House, London-rd., Datchet.

J. B. (Utilities), Ltd. (516021.) Regd. Feb. 12, 287, Grays Inn-rd., W.C.1, contractors in painting, decorating, plastering, etc. Nom. cap.: £100. Dir.: A. J. Campbell, 7, Cascade-ave., Muswell Hill, N.10.

W. J. Cumming (Building and Decorating), Ltd. (516053.) Regd. Feb. 12, 8, Drapers-gdns., Throgmorton-ave., E.C.2. Nom. cap.: £1,000. Dir.: E. Newman, 24, The Ridgeway, Stanmore, Middx.

C. Coates (Bradford), Ltd. (515992.) Regd. Feb. 12, steeplejack. Nom. cap.: £100. Dirs.: C. Coates and Mrs. E. M. Coates, 36, Hollybank-rd., Bradford.

D. and E. (Engineering Consultants), Ltd. (516060.) Regd. Feb. 13, 436, Grand-bldgs., Trafalgar-sq., W.C.2. Nom. cap.: £100. Dir.: J. Dootson, 50, Parkside-ave., Littlehampton.

Eastern Stone Cleaning and Restoration Co., Ltd. (516062.) Regd. Feb. 13, 38, Grosvenor-gdns., S.W.1. Nom. cap.: £1,000. Dirs.: L. J. Negus and Elizabeth Negus, Galteemore, Tongdean-rd., Hove, Sussex.

Eric M. Taylor, Ltd. (516064.) Regd. Feb. 13, bldr. and contractor. Nom. cap.: £6,000. Dirs.: E. M. Taylor and Mrs. E. V. Taylor, Brooklands, High-st., Ongar.

Cowley and Fothergill, Ltd. (516086.) Regd. Feb. 13, 77, Ducie-st., Manchester, 1, bldrs. and contractors, etc. Nom. cap.: £1,000. Dirs.: W. Pickering and Dora Pickering, 3, Wharfedale-ave., Moston, Manchester, 10.

A. J. Barker, Ltd. (516100.) Regd. Feb. 14, bldrs., etc. Nom. cap.: £1,000. Dir.: A. J. Barker, 54, Buxted-rd., Friern Barnet, N.12.

Annol Builders, Ltd. (516101.) Regd. Feb. 14. Nom. cap.: £500. Dir.: C. P. Nolan, 135, Oscott School-la., Kingstanding, Birmingham.

Hutton Construction, Ltd. (516119.) Regd. Feb. 14, 121a, Stamford-st., Ashton-under-Lyne, bldrs., contractors, etc. Nom. cap.: £2,000. Dir.: A. Morris, Moorlands, 123, Mellor-rd., Ashton-under-Lyne.

LEEDS UNIT PAYMENT SCHEME

Encouraging Results with First 138 Houses

IN A LITTLE over eight months, the first 138 houses built for Leeds Corporation under the unit payment system have just been completed on the Moorside Estate, Bramley. They consist of 68 two-bedroomed houses, and 70 three-bedroomed.

Under the same system, evolved by Mr. H. R. Hudson, LRIBA, MRSanI, Leeds Corporation Director of Works, it is expected that before the end of the year 204 houses on the Beechwood, Seacroft, Ireland Wood and Swinnow Estates will have been completed.

Contractors on the Moorside houses agree that a big advantage under the scheme is that payment is made in full on the completion of each unit, thus helping the contractor with limited capital. A plumber's representative said: "I think there is a future for the scheme in this city. It has turned out the houses and it has turned them out at the right price."

An advantage to the ratepayer is that, due to speedy construction, loan charges are reduced and increased revenue is obtained from rent and rates.

It is understood that the cost of administration amounts to less than £18 a house.

** Details of the scheme were given in our issue of January 11, 1952.—ED.

TRADE NEWS

New Addresses

Parker, Winder and Achurch, Ltd., door and window fittings specialists, of Birmingham, have opened new London offices and showrooms at 16, Grosvenor-place, Hyde Park Corner, S.W.1 (Tel.: Sloane 2339). Mr. Bernard A. Peck has been appointed manager and he and his staff will be pleased to answer any inquiries or give any further information concerning the firm's products.

As from March 25, the sales office of the paints division of Burt, Boulton and Haywood, Ltd., of Belvedere, Kent, will be at Brettenham House, Lancaster-place, London, WC2.

From March 23, the address of Tersons, Ltd., of London, EC1, will be 4, Dollis Park, Church End, Finchley, N3 (Tel.: Finchley 2688).

Cramps and Dowels

A leaflet has been published by W. J. Furse and Co., Ltd., 9, Carteret-street, Westminster, SW1, giving details of their non-ferrous cramps and dowels for all structures. The designs illustrated are available in cast leaded gunmetal, phosphor bronze, aluminium bronze and alternatively soft or hard-drawn H.C. copper to the appropriate British Standard Specification. The manufacturers also produce in other non-ferrous metals to requirements.

Mechanical Handling

An illustrated booklet containing details of the "Coles" mechanical handling appliances for the timber industry has been produced by Steels Engineering Products, Ltd., of Sunderland. One of these appliances, the "Coles L-1210" 10-ton lorry-mounted crane, has a cantilever lattice jib with alternative lengths between 20 ft. and 40 ft.; a hoisting pull of 5,600 lb. at 60 ft. per minute; and a slewing motion of two revolutions per minute with load. Its derricking motion is 30 seconds from maximum to minimum, and the weight of the total assembly including lorry is about 20 tons, with standard jib unloaded.

Glue Kettle

A glue kettle produced by Croid, Ltd., Imperial House, Kingsway, W.C.2, is designed to save the time and money of the small builder and carpenter. It consists of a can which encloses an inner container filled with glue. To use the kettle one removes the glue container and fills the larger receptacle with water. The glue container is then replaced without its lid and the kettle heated until all the glue is melted. Utmost economy is understood to be derived from the fact that the glue is already prepared at the right consistency for immediate use, and can be reheated without loss of strength or waste.

New Adhesive

An adhesive has been developed for more convenient bonding of laminated plastics sheeting to conventional wall surfaces. Marketed under the trade name of "Evo-Stik SH-12," it is made by Evode, Ltd., Stafford, and is of the semi-rigid type. The adhesive is understood to be applied direct without the need of a primer, and to develop quickly a strong tack which will immediately hold a laminated panel in a vertical position without timber strutting, needing only hand pressure to bond the two adhesive films together. This bond is claimed to increase in strength rapidly during the next four hours until its optimum is reached after four days. The resultant adhesive film line is water and oil proof, immune to dilute acids, and will withstand temperatures up to 165 degrees F. This adhesive was used in the recent installation of over 600 sq. ft. of "Formica" at the new premises of Roys Bakeries, Ltd., of Birmingham.

The Welding of Aluminium

"The Welding of Aluminium Alloys by the Latest Production Techniques" is the subject of a series of demonstrations being arranged by Northern Aluminium Company, Limited, at various centres throughout the country. At each the welding of aluminium by the shielded inert gas metal arc and the argon tungsten arc processes will be demonstrated, followed by the first showing in this country of two films, "Aircomatic Welding" and "The Study of Arcs in Sigma Welding." The programme will conclude with a discussion. The first demonstration was held on Wednesday at Slough, and others on March 25 at the Government Training Centre, Bilton-way, Enfield-highway, Middlesex, and on April 1 at the Southampton Technical College, St. Mary's-street, Southampton. Arrangements are being made to hold subsequent demonstrations at Bristol, Cardiff, Birmingham, Liverpool, Manchester, Leeds, Sheffield, Newcastle and Glasgow within the next few months.

Precision Bending Machine

Economy in tube bending, especially where off-set bends are required, can only be effected when the straight lengths of tube between the bends is as short as possible. To tackle this problem, Chamberlain Industries, Ltd., of Staffa Works, Leyton, E.10, have designed and produced the "Truset" bending machine incorporating an improved back stop with the centre forming block. The whole idea is based upon the back stop being as narrow as possible and yet so designed as to give the necessary grip and support, to prevent slipping and distortion to the tube during the bending operation.

Precision bending to accurate dimensions is ensured by the back stop, attached to the tube former, adjusting its grip automatically in accordance with the load applied. Formers are available for the bending cold and unloaded through any angle up to 180 degrees of tube sizes up to a maximum of ¾ in. NB gas tube and 1½ in. diameter in copper and light gauge tube.

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REDUCING BUILDING COSTS

Return to Traditional Materials Advocated

BUILDING operatives' output was not so bad as it was sometimes stated, MR. J. WHITTALL, a member of a team from the Birmingham Association of Building Trades Employers, said at a recent brains trust held with a team from the Birmingham and Five Counties Architectural Association.

Answering a question on what could be done to reduce building costs, Mr. Whittall said that this was a vast problem which covered every facet of the industry. The increase in costs was due to the general trend throughout the country, and he could not admit that building costs had increased disproportionately.

It had to be admitted, however, that costs were too high and there were possibilities of reducing them. He thought that there might be a relaxation of certain controls which, in his opinion, had outlived their usefulness, such as the rearrangement of financial obligations under contracts to bring them up-to-date with existing restrictions on credit and closer co-operation between quantity surveyors to achieve a much quicker settlement of accounts.

"One must think of improvements in the mechanisation of the industry but that is closely allied to the present scale of taxation which prevents most contractors from retaining sufficient capital to indulge in the luxury of paying for costly, and often experimental, mechanical contrivances," he said.

A far closer and realistic co-operation between the architects and contractors would do much to reduce building costs. He suggested a return to traditional materials and forms and an up-to-date approach to the values and qualities of additional building materials. This should occur in the pre-planning when joint consultation would ease the cost.

NEW FINNISH HARDBOARD

Varied Surfaces Available

PRODUCTION of a new type of Finnish hardboard, known as "Schauman" board, is expected to begin this month at a mill at Nyslott which has recently been constructed for Oy. Wilh. Schauman A.G., the largest producers of plywood and blockboards in Finland.

The new mill incorporates the most up-to-date machinery, permitting of a very varied treatment of pulp, which in turn makes it possible to provide any surface finish—darker or lighter, harder or softer—required. So far, it is claimed, no other mill has similar equipmment in operation. Humidity can also be controlled to meet customers' requirements. The mill has an initial capacity of 12,000 tons a year, but this can be expanded as necessary.

The product will be marketed only under the name of "Schauman" board, and further information concerning it can be obtained from the sole selling agents in the United Kingdom, Pharaohs (Distributors), Ltd., Adelaide House, London, E.C.4.

OVERSEAS BUILDING

[From Our Own Correspondents]

Australia.—Hotel-building and reconstruction are getting some attention in Melbourne now, and plans held up formerly by building controls are being brought out of "cold storage." The city will need at least 3,000 more rooms to put its Olympic Games accommodation for 1956 on a par with that provided at Helsinki. Federal Hotels, Ltd., have commenced an extensive refit of their Hotel Alexander, renamed the Savoy Plaza, which will make it the most up-to-date in the Southern Hemisphere and comparable with the best elsewhere. The cost is estimated at from £A150,000 to £A200,000.

Carlton and United Breweries, Ltd., Melbourne, one of the biggest hotel-owners in Australia, has now announced plans for an ultra-modern building to replace its Hosie's Hotel in Flinders-street. Demolition of the existing building will commence soon, and it is hoped to have the new structure (costing £A350,000, exclusive of furniture, fittings, etc.) ready for occupation by 1954. Architects are Messrs. Mussen, Mackay and Potter, 383, Latrobe-street, Melbourne, who will also supervise the construction. The building will be of 13 storeys, air-conditioned and soundproofed throughout. The exterior will feature large areas of aluminium and coloured glass. Other features include a goods and two passenger lifts serving all floors, built-in furniture, a bathroom for each bedroom, telephone and iced-water service. Lounges and reception rooms on the fourth floor will open out on to a terraced roof garden, made possible by stepping back the upper storeys from the street frontage.

Brazil.—The new law dealing with the development of the Amazon region in Brazil was recently signed by the President. This scheme, which has been under consideration for years, will lead to large-scale building in the near future. Anti-flooding plans are being considered, as well as projects for the agricultural utilisation of the area. Communications will be extended into this area, much of which has hitherto been uncharted.

In order to keep pace with rapid industrialisation, the Joint United States-Brazil Commission for Economic Development is doing everything possible to increase the supply of electrical power. To this end a proposal for the construction of a thermo-electric station at Piratininga, near Sao Paulo, has been approved. This station will be large enough to produce 160,000 kw. and will cost about £10m. Foreign contractors will in all probability be asked to submit tenders once final plans have been authorised.

A scheme is also afoot to build factories to assemble Fokker aircraft under licence from the Netherlands.

**Canada.*—Mr. J. C. Millar, of Corrosion Consultants, Ltd., 1292W, Georgia-street, Vancouver 8, B.C., has expressed interest in contacting U.K. firms which specialise in devices, materials and equipment for the prevention of corrosion in tanks, boilers and water pipes. Interested firms should communicate direct with Mr. Millar at the above address. Inquiries by telephone should be made to the Board of Trade, Tel.: Trafalgar 8855, Ext. 2704.

Ceylon.—A contract for the design and construction of the reinforced concrete frame for the New Supreme Courts at Bambalapitiya, Colombo, Ceylon, has been awarded to Messrs. Rush and Tompkins, Ltd., of Sidcup, Kent. The approximate value of the contract is 2,523,200 rupees.

Haiti.—The Government of Haiti announces a number of projects which are arousing interest among contractors abroad. These fall into various categories, and among them are the following: Irrigation of the Artibonite Valley costing in the region of £3m. and awarded to an American firm; setting up of a factory to produce indigo; exploitation of copper in the region of Cap Haiten, which will require a number of buildings; construction of a cocoa factory at Anse d'Hainault, concession of which has been granted to an American industrialist.

At Source Matelas a new cement factory is being built, financed by a French firm.

A British technical representative is at present in Port-au-Prince making a survey of the telephone system, which is to be modernised and extended.

A British firm has submitted a tender for the construction of a new abattoir, but no decision has yet been made.

Talks are also going on which centre round the electrification of certain villages in the south of the country. Power will be supplied by the utilisation of the waters of the Saut Mathurine. Swiss engineers are to make a survey of the scheme and to submit an estimate of the cost of the scheme to the Haitian Government.

The airfield in Haiti is now considered unable to cope with heavy modern traffic. In order to improve matters and to encourage use of the airport, plans are being considered for expanding the runways and other facilities. Pan-American Airways are interested, but so far no Government action has been taken.

Iraq.—A West German firm has been awarded a contract worth the equivalent of £5m. to build the second part of the Wadi Thartar scheme, one of the five large-scale irrigation schemes aimed at making Iraq a leading granary of the world. The firm is Zublin, of Duisberg. The project, on the Tigris, 60 km. north-west of Baghdad, will irrigate much of northern Iraq. It includes hydro-electric plants and a reservoir bigger than the one at Boulder Dam in the U.S.A.

Italy.—A new hydro-electric centre is being constructed at Basso Nera, about 50 miles from Rome. This centre is being built to ensure reliability of supply to the Italian capital. It will have an annual production of 90m. kw. hours.

Work is going ahead on the development of the western end of Genoa harbour. Quays and installations are being built for the handling of crude oil and there are plans to erect a station for the compression of methane gas conveyed by pipe-line from Coretmaggiore. Improvements are also being carried out in the small port of Imperia, halfway between Genoa and the French border, in order to attract yachts and small craft.

Saudi Arabia.—There has been some reshuffling in the plans of the Saudi-Arabian Government for development of the country. Despite some changes and the evaporation of German competition for large contracts, due to uncertainty of commercial relations between both countries, it looks as though the contract awarded to the German firm of Siemens for the new tele-communications system will go through. The American firm Michael Baker, Junior, Inc., remains as Government consulting engineers. A prominent firm of local contractors worth noting, Messrs. Bin Ladin, is also taking an increasing part in Government construction works.

Final specifications for a barracks at El Kharj have not yet been produced, though they are expected any time now. The first phase of the construction programme, which has been allotted to Michael Baker, Jun., Inc., mentioned above, will cost some $12m. There are 15 firms, including British firms, interested in the second phase of construction, which will cost about $24m.

The survey of the route for the Riyadh-Jedda railway has commenced and will take nine months to complete.

A British firm, name not disclosed, is to install a new automatic telephone system in Jedda. A representative of the firm is at present surveying the work. It is learned that the Anglo-Arabian Construction Company has obtained large new contracts in Riyadh.

Spain.—Spain has plans this year for the construction of additional hydro-electric plants. So much required are these plants that a mixed Spanish-Portuguese Commission has been meeting in Madrid to find means of utilising the waters of the river Douro. Latest reports state that a wide measure of agreement has been reached.

Reports from New York confirm reports that the Radio Corporation of America has completed plans to set up a factory outside Madrid for the large-scale manufacture of radio, television and other electronic equipment. The subsidiary Spanish company, to be named "Empresa Electronica," will be financed by Spanish and American capital

* From the Board of Trade Special Register Information Service.

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and will provide employment for 1,000 Spanish workers.

The well-known firm "Altos Hornos de Vizcaya," which owns iron and steel enterprises, is displaying considerable interest in the north and South of Spain. Seven projects have been submitted to the Government by them for the modernisation and extension of their plants at Baracaldo and Sestao, near Bilbao. This programme, which will cost about £6m., should be completed by 1956.

A factory is also to be erected near Madrid which will manufacture 30-h.p. wheel tractors at a price competitive in world markets.

Under the auspices of Agroman, the important firm of constructional engineers, a new firm called "Tecnicas Especiales" is being set up for the purpose of industrial research, especially in the field of metallurgy.

The Minister of Public Works has given sanction for the work to proceed on improvements for the accommodation of tankers at Escombreras, near Cartagena.

Sweden.—The Government Commission on Electrification in Sweden, in a recent report, recommends speedy new measures to improve the distribution of electricity in rural areas. The programme suggested by the Commission involves a cost of about £30m., spread over between 10 and 20 years.

A new hydro-electric plant, which will be the biggest in Sweden and with an annual output of 2,200m. kw.h., is to be built near the mouth of the Umea river. The new plant will cost about £15m. and will be ready for operation in 1959 if all goes according to plan.

CANADIAN INVESTMENT

UK's Desire to Participate

SPEAKING at Ottawa on March 15 before leaving for home, the Chancellor of the Exchequer (Mr. Butler) expressed confidence that in the period ahead Canada would not fail to take again her historic role in linking the Commonwealth with North America. The British Government, Mr. Butler added, were not forgetful of the advantages of United Kingdom investment in Canada, and added: "To the extent that we can afford it we are most anxious to participate in your tremendous development."

He asked his hearers to reflect on what recent British exports to Canada represented in the form of industrial leadership. Among notable contracts he mentioned the $10m. worth of plant and equipment ordered for the new Toronto subway, including latest types of signalling equipment and rolling stock; over $11m. worth of "turbo-prop" Viscount aircraft; transmitting equipment for the television station to be opened at Ottawa; millions of dollars worth of electrical plant; and the rapidly increasing quantities of machine tools and highly specialised electronic and radar equipment for the Canadian defence programme.

Plumbing for Hospitals

A bulletin recently published by the Lead Industries Development Council, Eagle House, Jermyn-street, SW1, gives basic principles for the design of plumbing in hospitals. It offers guidance as to the lay-out of piping and the close grouping and arrangement of the sanitary appliances. Sizes and weights of lead and lead-alloy pipe are also included. This bulletin, entitled "Plumbing for Hospitals, the Use of Lead Pipe," can be obtained on application to the Council.

The SCOTTISH BUILDER

Economy in the Use of Timber

A MINISTRY of Works Memorandum on economy in the use of timber for building work in Scotland has been published by HM Stationery Office, price 6d. The Memorandum makes general recommendations, and specifies the extent to which softwood, as a controlled material, will be allowed for various types of building work.

The Memorandum is being circulated to Local Authorities in Scotland. It will also be of interest to all others concerned with the design and construction of buildings.

New System of Construction

THE FIRST "Clyde Building" by the Henderson patented system of construction has been completed in Glasgow. Basis of this system is the use of ⅜-in. mild steel rods at 18-in. centres, checked by a gauge bar, to take precast blocks in which suitable rod holes have been created. Given accurate foundation laying and positioning of the rods, the subsequent building can be erected by unskilled labour at a cost claimed to be at least 33 per cent. below comparable buildings of brick or concrete blocks.

The first building, a whisky store in Glasgow, uses an external dense concrete 3-in. block of 3 ft. by 8 in.; the total building measuring 21 ft. by 9 ft. since the system demands construction in multiples of 3 ft. An inner wall, also by the same system, using mild-steel rods, is in breeze blocks, made in the same moulds, thus maintaining the standardised pattern. For the roof this building uses precast concrete beams, the roof trusses being linked to the projecting rods at the eaves course.

Although this job is of two-wall construction, it is intended to produce single-skin summer chalets, and cottages, with appropriate finish. The intention later is to build a 3-4 room cottage and then to go on to two-storey construction.

The Late Mr. A. Hugh Mottram, FRIBA

WE REGRET to record the death which occurred recently at his home in Gullane of Mr. A. Hugh Mottram, FRIBA, FRIAS, FSA (Scot.), a former president of the Edinburgh Architectural Association.

Mr. Mottram was educated in Norfolk and Lausanne, Switzerland. He trained under Sir Raymond Unwin, one of the pioneers of the "Garden City" tradition in town planning, later working with him as an assistant on Letchworth and Hampstead garden cities. In 1915 he came to Scotland as architect and town planner of the "New Town" of Rosyth.

He was architect to the Scottish National Housing Company, the Edinburgh Welfare Housing Trust and the Edinburgh Housing Association, and carried out many housing schemes in various parts of Scotland. He was one of the first architects to the Scottish Special Housing Association.

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NEW BUILDINGS

Aberdeen.—Corporation to erect a new branch library, est. to cost £9,000, at The Northfield housing estate. The architect is Alexander Gardiner (F), Municipal Offices, Market-st., The Castlegate, Aberdeen.

Argyllshire.—Plans to be prepared for scheme of 112 houses to be erected at The Langsdale and other housing sites by the Corporation. Architect is David Galloway (F), Municipal-bldgs., Argyll-st., Oban.

Dumbartonshire.—Plans in hand for new works offices for Drysdale & Co., Ltd., to be erected at Bulldale-st., Yoker. The architects are John Keppie and Henderson and J. L. Gleave (F and A), 196, West Regent-st., Glasgow.

East Kilbride.—Lanarkshire C.C. to have plans prepared for new public school with two gymnasiums, for which the architect is William Watt (F), Council Offices, Albert-st., Motherwell-Wishaw.

Glasgow.—Plans in hand for the South West of Scotland Board, for the reconstruction of the electrical services, canteen and district engineer's offices, for which the architect is J. Henderson, BSc, 62, Dalziel-dr., Pollockshields, Glasgow.

Glasgow.—Plans in the hands of their architects for new garage and filling station to be erected at Dunblane and MacPhater-sts. by John Paterson (Motors), Ltd., 305, Hope-st., Glasgow.

Glasgow.—Plans prepared for extensions to blocks at the Southern General Hospital, Paisley-rd. West, Shieldhall, for which the architects are John Keppie & Henderson and J. L. Gleave (F & A), 196, West Regent-st., Glasgow.

Glasgow.—Plans in hand for new buildings for Alexander Woodrow & Son, Ltd., which are to be erected at Colquhoun-st. The architects are Wylie, Shanks & Wylie (F & A), 120, Blythswood-st., Glasgow.

Kirkcaldy.—Corporation to erect scheme of 520 houses, their architect being Robert Meldrum, AMTPI, AMInstCE, Master of Works Offices, Whitescauseway, Kirkcaldy.

Lochaber.—Plans for the building of a large hall with a seating capacity of 1,250, and at an approximate cost of £25,000, which will serve as a central meeting place for Lochaber and the West Highlands, have been approved by a provisional committee representative of social, educational, and youth organisations throughout the district.

Ross and Cromarty.—Plans to be prepared for 30 houses to be erected at The Donkey Bridge housing site, Invergordon. The architect is J. Woodburn, Master of Works Offices, Invergordon.

Stirlingshire.—Plans in the hands of their architects for demolition scheme and the erection of new buildings at their works by the Grangemouth Iron Co., Ltd., Camelon.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

MARCH 24.

*†**Dorking U.D.C.**—160 houses at Goodwyns Farm housing scheme (phase I). Clifford Culpin & Ptnr., FA.RIBA, 3, Southampton-pl., W.C.1.

MARCH 26.

*†**Surrey C.C.**—Ambulance station, Chertsey. County A., Kingston.

MARCH 27.

*†**Bristol City C.**—Five shops with offices at junction Union-st./Fairfax-st. City A. Dep. £2 2s.

MARCH 28.

*†**Essex C.C.**—Additions to Manor House, Brentwood-rd., Gidea Park. County A., Chelmsford.

MARCH 31.

Atherstone R.D.C.—Two shops and five maisonettes at Coronation-ave., Polesworth. H. Jepson, architect, Midland Bank-chbrs., Nuneaton. Dep. £3 3s.

*†**Blackburn B.C.**—Stage 1 of a new technical college. Willink & Dod (FF.), Cunard-bldg., Liverpool. Dep. £3 3s. Tenders by May 15.

*Dartmouth B.C.—43 houses and eight bungalows at Townstal housing estate. B.E. Dep. £2 2s.

*†**Durham C.C.**—Two farm steadings at Moor Farm, Spennymoor. County A., Court-la., Durham.

*†**Durham C.C.**—Extensions to central repair depot, Framwellgate Moor. County A., Court-la., Durham.

*†**Durham County Police Authority.**—Five houses and one office at Glenfield-rd., Blackwell, Darlington; three houses and one office at West Boldon; 10 houses at Belasis-la., Billingham; in separate contracts. G. Clayton, FRIBA, A. to Police Authority, Court-la., Durham.

Northwich R.D.C.—96 houses, two bungalows and 12 flats on various sites. J. Birtwistle, E. & S., Whitehall, Hartford.

*†**Paddington B.C.**—10 dwellings, Portnall-rd., W.9. T.C. Dep. £2 2s.

Seaham U.D.C.—102 houses at Westleigh estate. A. Smith, E. & S.; Cliff House. Dep. £3 3s.

APRIL 1.

*†**Hampshire Police Auth.**—Police houses at Chilworth, near Southampton; Ibsley, near Ringwood; and Havant police station. County A., Winchester. Dep. £1 1s. each.

St. Germans R.D.C.—24 houses at Pengelly site, Callington. Surveyor, "St. Germans," Tower Port View, Saltash. Dep. £2 2s.

APRIL 2.

*Altrincham B.C.—Paper-baling and bin store, Wharf-rd. B.S. Dep. £2 2s.

Eston U.D.C.—22 aged-persons' bungalows on the Redcar-rd. East estate, South Bank. E. & S., Normanby-rd., South Bank, Middlesbrough. Dep. £2 2s.

APRIL 3.

Cudworth U.D.C.—82 dwellings at Darfield-rd. housing site. E. & S. Dep. £2 2s.

APRIL 4.

*Droitwich B.C.—55 houses and three shops with flats over. B.E. & S. Dep. £2 2s.

APRIL 6.

*Ormskirk U.D.C.—198 houses. E. J. Wright, S. Dep. £2 2s.

APRIL 7.

*Brighton B.C.—Factory, Hollingbury estate, Light Industrial area. D. J. Howe, M.Inst.C.E., 26-30, King's-rd. Dep. £3 3s.

*Glasgow Corpn.—150 flats at Garthamlock housing scheme. Hsg. Dept., 20, Trongate, Glasgow, C.1.

*Gt. Yarmouth B.C.—Extensions at Technical College, Lichfield-rd. Schools A., 22, Euston-rd. Dep. £2 2s.

*†**Portsmouth City C.**—Old people's homes at Wymering. City A. Dep. £3 3s.

*Stockton-on-Tees B.C.—Junior school for 320 pupils at Roseworth, Durham-rd. Boro' A., 28, The Square. Dep. £2 2s.

*†**Thurrock U.D.C.**—23 flats at Chadwell St. Mary. A. Poole, Clerk of Council.

APRIL 8.

*East Riding of Yorks C.C.—12 police houses at Bridlington. County A., Beverley. Dep. £2.

APRIL 9.

*Bathavon R.D.C.—102 dwellings, Red Post, Peasedown. W. A. Williams, architect, 5, Woodst., Bath. Dep. £2 2s.

APRIL 10.

St. Albans R.D.C.—40 dwellings in Saxon-rd., Wheathampstead. Architect, 43, Upper Latimore-rd. Dep. £2 2s.

*Walton and Weybridge U.D.C.—16 flats, Thruppsla., Hersham. E. & S.

*Walton and Weybridge U.D.C.—48 flats, Thruppsla., Hersham. E. & S.

APRIL 13.

Carlton U.D.C.—36 bungalows, scheme No. 72, Coronation-walk, Burton-rd., Gedling. E. & S., Carlton. Dep. £3 3s.

*Leeds City C.—146 dwellings in seven contracts. City A. Dep. £1 1s. each contract.

*Rugby B.C.—Store cattle sale ring, Cattle Market. B.S., Burford House, Church-walk. Dep. £2 2s.

St. Helens T.C.—Two police houses and four fire service houses at Alder Hay-rd./Dodd-ave. B.E. Dep. £2 2s.

APRIL 14.

*Beckenham B.C.—10 flats, Beck-la. estate B.E. & S. Dep. £2

APRIL 15.

*Bradford City C.—60 pairs of houses, Thorpe Edge estate, Idle, and five pairs, Haworth-rd., Bradford. City E. & S. Dep. £2 2s.

APRIL 18.

†Maidstone R.D.C.—18 houses at Marden; 22 houses at Yalding; and 30 houses in two contracts at Coxheath. E. & S. Dep. £2 2s. Tenders by May 23.

*Neston U.D.C.—84 houses forming third phase (Contract "C") of Liverpool/Raby-rd. housing scheme. G. D. Walford & Ptnrs., 20, Castle-st., Liverpool, 2. Dep. £2 2s.

APRIL 21.

*East Riding of Yorks C.C.—Institute of Agriculture and ancillary buildings at Bishop Burton. County A., Beverley. Dep. £2.

APRIL 22.

*Kendal B.C.—54 houses, Hall Garth estate. B.E. & S. Dep. £2 2s.

MAY 15.

Government of the Union of Burma.—Construction of passenger-handling building, freight building, drivers' rest rooms, bus and car shelters and other incidental site works at Mingaladon Airport, Rangoon. Norman & Dawbarn, architects and consultant engineers, 5, Gower-st., London, W.C.1. Specifications, contract documents and plans, £20 per set.

NO DATE.

*Leamington Spa B.C.—12 flats, Lillington estate. Rayner & Fedeski, architects, 28, The Parade. Dep. £2 2s.

North Witchford R.D.C.—16 houses and eight bungalows at Eaton estate, Wimblington; 18 houses and six bungalows at Manor estate, Doddington. R. Jakens, architect, 4, Elwyn-rd., March.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

MARCH 25.

*Ashington U.D.C.—Supply of doors for Darnley-rd. housing site. E. & S.

MARCH 31.

*Huntingdonshire C.C.—Various trades for new secondary modern schools, Ramsey and St. Ives. County A., Huntingdon.

APRIL 9.

*Glasgow Corpn.—Heating installations in 70 flats at Sannox-court. Hsg. Dept., 20, Trongate, Glasgow, C.1.

ROADS, SEWERAGE AND WATER WORKS

MARCH 30.

*Newcastle-upon-Tyne City C.—Roads and sewers for 36 houses at Bosworth-gdns. City E.

APRIL 2.

Sevenoaks R.D.C.—Roads and sewers, permanent housing site, London-rd./Madam-rd, Westerham. E. & S. Dep. £2 2s.

APRIL 4.

Guildford, Godalming and District Water Board.—Laying and jointing of spun-iron water mains, fittings, etc., at Binscombe Farm housing estate, Godalming (section 3). Chief Engineer, Branksome, Filmer-grove, Godalming. Dep. £2 2s.

APRIL 8.

Birmingham City C.—Completion of roadworks on Bell Holloway estate, Northfield. City E. & S. Dep. £2 2s.

APRIL 10.

St. Albans City C.—825 lin. yds. sewers with ancillary works. City E. & S. Dep. £2 2s.

Wakefield T.C.—Rolled asphalt surfacing work. City E., Town Hall.

APRIL 13.

Market Harborough R.D.C.—3,500 yds. foul sewers, and sewage disposal works at East Langton. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

Zetland C.C.—Construction of dam across outlet from Houlls Water, Brae (North mainland), with intake, filter and storage tank, and 8,000 yds. piping. Blyth & Blyth, MM.ICE, 135, George-st., Edinburgh, 2. Dep. £5 5s.

Zetland C.C.—Construction of dam, filters, storage tank and 17,000 yds. piping at Cunningsbrugh (South mainland). Blyth & Blyth, MM.ICE, 135, George-st., Edinburgh, 2. Dep. £5 5s.

APRIL 16.

*Gloucestershire C.C.—Construction of 150 ft. r.c. bridge carrying A.417 over River Severn. County S., Quay-st., Gloucester. Dep. £5 5s.

Romsey B.C.—Making-up of Tadfield-rd. B.E. & S.

APRIL 18.

Felling U.D.C.—Sewage disposal works at Follonsby-la. W. Radford & Son, Albion-chbrs., King-st., Nottingham. Dep. £3 3s.

APRIL 27.

York Waterworks Co.—Water tower of one million galls. capacity at Siward's How. H. Whitehouse, company's engineer, Yorks Waterworks Co., Lendal Tower, York. Dep. £4.

GENERAL BUILDING WORK (LONDON)

Camberwell.—Community Centre.—Proposals made by the Director of Housing for the erection of a community centre in two stages at the Denmark Hill housing estate have been agreed in principle by B.C., and the Director is to proceed with drawings for the first stage.

Camberwell.—Site Acquisition.—B.C. has been recommended to acquire the following sites: 46-54 (even), Sunwell-st.; 119 and 121, Wells-way; and 60, Kings-grove.

Greenwich.—Revised Layout.—Revised layout for the erection of 101 dwellings in 11 blocks at Pond-rd. housing site, proposed by Richardson and Houfe, FF.RIBA, 16, Northumberland-ave., W.C.2, has met with B.C.'s approval.

Hampstead.—Schools.—M. of E. is to be recom-

mended to include in 1954-55 special schools building programme a proposed day school for 160 handicapped children at Avenue-rd. with admin. block, and the later erection of a school for delicate children, at total est. cost £100,000.

Hampstead.—SITE ACQUISITION.—B.C. are recommended to acquire No. 111, Abbey-rd. and sites of 113, 115 and 117, Abbey-rd. for housing purposes. Hsg. Com. have appointed T. P. Bennett & Son, FF./AA.RIBA, 43, Bloomsbury-sq., W.C.1, as architects for the preparation of a preliminary report with sketch layout plans.

Harold Hill.—DOCTORS' HOUSES.—The provision of two doctors' houses at Harold Hill estate, Essex, is proposed by L.C.C. Hsg. Com., at est. cost £8,630.

Millbank.—RIVER WALL.—Proposals are being made by L.C.C. T.P. Com. for the reconstruction of the Thames wall at Millbank, S.W.1. Cost is estimated to be between £200,000 and £250,000.

St. Pancras.—HOUSING.—Hsg. Com. recommend that sketch proposals submitted for council's observations by L.C.C. for the Regent-sq. Development Area be approved in principle. They provide for the erection of 206 flats in seven blocks, 84 flats of which could be erected as a first stage, and also envisage the use for housing purposes of the vacant site north of the existing Regent-sq. Architects are Davies & Arnold, FA.RIBA, 27, Grosvenor-place, S.W.1.

St. Pancras.—DEVELOPMENT.—Hsg. Com. have considered and approved layout proposals submitted by I. B. M. Hamilton, FRIBA, 16, Old Buildings, Lincoln's Inn, W.C.2, for the development of the Goldington-cres. site. The detailed planning will follow generally that of Godwin-ct. The proposals provide for resiting of P.H. at the junction Goldington-cres./Werrington-st. The ground floor of Crowndale-rd. frontage will be planned as shops.

St. Pancras.—AMENDMENT.—Hsg. Com. are to discuss with L.C.C. T.P. Com. an amendment required by the latter in the layout prepared by T. Sibthorp, FRIBA, 10, Manchester-sq., W.1, for the erection of 16 flats on Lady Margaret-rd.-St. Benet's Vicarage site.

St. Pancras.—SITE ACQUISITION.—The suitability of the following sites for acquisition by B.C. has been agreed in principle by Hsg. Com.: 201-207 (odd), Gray's Inn-rd and 1-5 (cons.), Heathcote-st., capacity 17 flats; 97 and 99 and chapel, Arlington-rd., capacity 12 flats; 34-48 (even), Albert-st., capacity 18 flats.

Wandsworth.—CHILDREN'S HOME.—Children's Com. of L.C.C. propose the acquisition and conversion of 22, Thrale-rd., into home for 11 children and staff, est. cost £8,750.

(PROVINCIAL)

Barnard Castle.—R.D.C. to build 50 houses at Evenwood and 32 at Gainford. Architect, J. Lawton,, 12, Galgate, Barnard Castle.

Beaumaris.—B.C. to erect further 20 houses at Cae Bricks site.

Birmingham.—Extensions and alterations to College of Arts and Crafts, for E.C. Architect, D. M. Ashford, 13, Highfield-rd., Birmingham.—Additional classrooms at Conway-rd. girls mod. sch., architects, Bromilow, While & Smeeton, 72, Newhall-st.

Brixworth.—R.D.C. approved layout plans for 98 houses at Moulton. Plans by S., F. A. Russell.

Burscough.—Brit. Leg. propose erection of new headquarters.

Chadderton.—Div. Ed. Executive recommended these schs. for inclusion in 1954/5 programme:—Cty. jun. adjoining St. Matthew's C.E.; 2 form entry at Chadderton Brook-st. jun. sch.; 2 form entry at Butterworth-la.; St. Paul's C.E. prim. sch. at Royton.

Cheadle, Staffs.—R.D.C. considering further 600 houses at Western Coyney.

Chesterfield.—Derbyshire C.C. propose new hostel for girls.

Consett.—U.D.C. to erect 40 houses in Gloucester-rd. at Delves-la.

Daventry.—R.D.C. seek loan £44,618 for 28 houses at West Haddon.

Durham.—Cty. Fire Brigade Com. estimates include £65,000 for fire station at Bishop Auckland; £150,000 for new H.Q. at Durham; £20,000 for fire station at Newton Aycliffe.

Easington.—R.D.C. approved 152 houses at Chapel Hill, Peterlee, for Peterlee Dev. Corpn.

Gateshead.—Durham China Co., Ltd., Team Valley Trading Estate, are to install a new kiln, est. cost £30,000.

Gosforth.—U.D.C. Surveyor, C. Wyld, is preparing plans for completing Rectory-grove, Belle Vue-ave. and St. Nicholas-ave. on South Gosforth estate.

Grangetown (Yorks).—John Smith's Tadcaster Brewery Co., Ltd., to construct first part of £40,000 hotel, subject to licences being obtained. Architect, Sir B. Wilson, 28, High-st., Tadcaster.

Jarrow.—T.C. recommended by Hsg. Com. to purchase 200 acres of land from Bolden U.D.C. Boro' E., H. W. T. Perkins.

Jarrow.—T.C. to erect 50 "Unity" type houses. B.E., H. W. T. Perkins.

Lancaster.—T.C. propose erection of two blocks of flats between Ramparts and Main-st.

"THE BUILDER" PRICES

IRON AND STEEL DEARER

The Minister of Supply, Mr. Duncan Sandys, has made an order raising, with effect from March 14, the maximum prices of iron and steel by an average of between 1 per cent. and 1½ per cent.

Copies of this order (The Iron and Steel Prices No. 2 Order, 1953) may be obtained from the Stationery Office.

CHAIN LINK FENCING

The Chain Link Fencing Association announce that, although the Iron and Steel Prices No.2 Order, 1953, authorises an *increase* of 1½ points in the current chain link fencing premiums, there is to be a *reduction* of 1½ points in those premiums on account of a fall in the price of refined and electrolytic zinc.

The net result is, therefore, that existing chain link fencing premiums are to remain unchanged as at March 14.

Lancs.—Work to commence on Padgate C.E. prim. sch. and Golborne sec. mod. girls' sch. this month.

Leigh.—T.C. propose ultimate development of Higher Fold estate to house 6,000.

Liverpool.—Horne Bros., Ltd., London, propose large, new shop and showroom premises at Lord-st. and Paradise-st. Architects, Hillier, Parker, May & Howden, London.

Maghull.—Lancs C.C. propose erection of children's home at Moorhey-rd. estate.

Morpeth.—R.D.C. to build 32 houses at Widdrington. Plans by surveyor, J. R. Miles.

Newcastle.—Vickers Armstrong, Ltd., Elswick, have obtained licence for first stage of proposed tractor factory at Longbenton.

Newcastle.—British Sailors' Society to convert 5 & 6, Osborne-rd. into hostel, and add more bedrooms. Plans by R. A. Anderson, Merchant Navy Club, Queen-st.

Newcastle.—W. L. Parsons, Fawdon-la. is to build warehouse, and has had plans approved.

Newcastle-on-Tyne.—City C. to let contract for erection of 21 houses on Copperas-la. estate. City A., G. Kenyon, 18, Cloth-market.

Newcastle-on-Tyne.—City C. received loan sanction for £543,639 for development of West Denton estate; £2,552,856 for erection of 566 houses, 1,284 flats and 48 old people's houses at Longbenton.

Northampton.—B.C. seek starting date for erection of aged persons' residential block at Kings Heath.

Northumberland.—C.C. to spend £25,000 on construction of central cooking depot at Seaton Burn. Plans by Cty. A.

Oldham.—Chetwood Estates, Ltd., have purchased Asa Lees Works for conversion into minature trading estate.

Oldham.—British Railways propose rebuilding of Mumps Station.

Ormskirk.—B.C. seek approval for 40 houses at Richmond-ave., Burscough, and 68 at Scot estate, Ormskirk.

Penrith.—Architect for proposed reconstruction of offices and showrooms at Corn Market for North-Western Elec. Brd., is F. E. B. Blanc, St. Andrew's-sq.

Preston.—R.C. Authorities propose transfer of Lea R.C. sch. to new site.

Rawtenstall.—B.C. approved sketch plans for 38 houses at Staghills Farm.

Rochdale.—B.C. propose 12 bungalows at Kingsland and Roylelands, 18 bungalows, 12 flats and two houses at Park-rd., 28 bungalows, 12 flats and four houses at Abbott-st.

Runcorn.—R.D.C. approved estimate of £9,250 for new council chamber at Castle Park; plans by S.

Salford.—Manchester Metal Works, Ltd., propose extensions and rebuilding of premises at Bury New-rd., Broughton.

Scarborough.—T.C. received loan sanction for £124,874 for erection of 96 houses on Eastfield estate, Seamer. B.E., H. V. Overfield.

Southport.—B.C. to invite tenders for adaptations to Fairholme, Oxford-rd., £15,000 est. cost.—To prepare detailed layout for houses, aged persons' bungalows, shops and flats at rear of Radnor-dr. and Emmanuel-rd.

South Shields.—B.E., John Reid, has prepared layout plans for development of land at West Simonside, providing for 428 houses, 60 bungalows and four shops and flats.

South Shields.—R. S. Malloch, 6, Eldon-sq., Newcastle-on-Tyne, has been appointed quantity surveyor by T.C. for converting premises in Beach-rd., South Shields, into hostel.—Page, Son & Hill, 75, King-st., South Shields, are architects for offices, garage and warehouse in Barrington-st., for Northern Press, Ltd.

Stalybridge.—B.C. to negotiate contract with Dean & Whipp, Ltd., Clarendon-rd., Hyde, for 12 flats at Brooklands site.

Stockton-on-Tees.—Licensing authorities approved proposal by Ind Coope & Allsopp, Ltd., to transfer licence of "Turf Hotel," John-st., to new premises to be built at cost of £9,500 in Durham-rd.

Stockton-on-Tees.—Stockton Grange Assoc. to carry out extensions to Grays-rd. Institute.

Stone.—U.D.C. propose erection of flats at Lichfield-rd. estate.

Stourbridge.—T.C. approved in principle plans for new college at Hagley-rd., Oldswinford (10-storey building for Worcs C.C.).

Sunderland.—T.C. received loan sanction for £487,738 for erection of 372 houses on Castletown estate. Boro' A., H. C. Bishop, Grange House, Stockton-rd.

Sunderland.—Hall & Stafford, Sunniside-chbrs., West Sunniside, have been appointed quantity surveyors by T.C. for £50,000 health centre at Pennywell.—Martin & Felton, Lloyds Bank-chbrs., Fawcett-st., have been appointed quantity surveyors by E.C. for proposed Hylton Red House cty. prim. inf. sch.

Tynemouth.—T.C. has approved erection of factory in Walker-pl., for T. B. Bilton & Son, brassfounders. Architect, W. Stockdale, 73, Howard-st., North Shields.

Upholland.—U.D.C. propose erection of flats at Alma Hill estate. Plans by S., J. T. Iball.

Wallsend.—J. M. Angus, 21, Lovaine-pl., Newcastle-on-Tyne, is architect for factory on north side of Coast-rd., for Lignum Products, Ltd.

West Hartlepool.—J. W. Cameron & Co., Ltd., Lion Brewery, received sanction from Brewster Sessions to build "Rossmere Inn" on Owton Manor estate.

West Hartlepool.—E.C.'s building programme for 1954-55 includes rebuilding of St. Joseph's R.C. jun. and inf. sch.; phase 1 of Brierton cty. sec. sch.; St. Teresa's R.C. jun. and inf. sch.; and Brierton House cty. prim. sch. Boro' A., A. G. Sinclair, Municipal-bldgs.

West Riding.—C.C. recommends building of nine homes for children at Adwick-le-Street, Bentley (2), Swinton, Rawmarsh, Wath-on-Dearne, Thurcroft, Askern and Maltby. Total cost, £36,000.

Whitby.—U.D.C. to consider erection of houses on Well Yard site.

Wingerworth.—John Adlington, Ltd., Clay Cross, propose between 1,500 and 2,000 houses at Lydgate estate.

Wirksworth.—U.D.C. propose 12 aged persons' bungalows and two houses at Derby-rd. estate.

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TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Birkenhead.—First instalment of extensions at Rock Ferry High sch., for E.C.: *William Tomkinson & Sons, Ltd., Liverpool, £31,395.

Bolton.—Stage II of Great Lever cty. sec. sch., for E.C.: *Stanley Porter, Ltd., Crofters Sawmills, Bolton, £103,537. Erection of double classrooms unit at Whitecroft cty. sec. sch.: *H. Sunter, 71, Tottington-rd., Harwood.

Bootle.—Erection of six dwellings at Irlam-rd., for C.B. B.S.: *W. W. Kenney, Ltd., 92, Liverpool-rd., North Maghull, Lancs, £8,474.

Brandon.—Erection of 69 houses at Ushaw Moor, for U.D.C. E. Hedley, architect, Council Offices, Langley Moor: *Direct Labour.

Broughton.—Erection of new sch., for Flintshire E.C.: *Shone, Ltd., Buckley, £76,860.

Burnham-on-Sea.—Eight houses at Burnham-rd. housing estate, Highbridge, for U.D.C. Nicholls & Barton, architects, 41, St. Mary-st., Bridgwater. Quantities by J. W. Gates:—

Wynn & Mear, Burnham-on-Sea	£18,344
*Standerwick & Sons, Taunton-rd., Bridgwater	18,087
L. Budge, Bristol-rd., Weston-super-Mare ...	18,066

Camberwell.—Dwellings, for B.C.: Nine at Evelina-rd., *Telgate, Ltd., £16,200; eight at Ondine-rd., *S. Varney & Co., Ltd., £16,519.

Chester.—211 houses at Blacon, for T.C.: *Thomas Warrington & Sons, Ltd., £291,573.

Cockfosters.—New synagogue with classrooms, for the United Synagogues. Harold Weinreich, Dip. Arch., ARIBA, architect, 180, Piccadilly, W.1: *Prefabricated Constructions, Ltd., 28, Pont-st., S.W.1.

Doncaster.—Sec. mod. sch. at Hills-la., Wheatley, for B.C. Boro' A.:—

John Holmes (Builders), Ltd., Doncaster ...	£26,603
D. Webster, Doncaster	24,780
T. A. Hanson & Sons, Doncaster	21,865
J. Dixon (Doncaster), Ltd., Doncaster ..	20,229
*Walter Firth, Ltd., Armthorpe-rd., Armthorpe, Doncaster...	19,806

Dudley.—Erection of aged persons' homes at the Woodlands site, for B.C.: *Batham & Beddall, Ltd., 9, Moor-st., Brierley Hill.

Durham.—Conversion of premises at Aykley Heads Hall into accommodation for the Cty. Surveyors' Dept., for C.C. Builders: *Bell & Ridley, Ltd., North-rd., Durham; plumbing: *E. Whitfield, 46, Claypath, Durham; electrical work: *Gray Bros., Durham; and painting: *R. E. Coleman, Ltd., Church-st., Durham.

Ebbw Vale.—Erection of 166 houses at Hilltop extension site, for U.D.C. J. L. Thomas, LRIBA, ARICS, architect to the Council, Council Offices, The Walk, Ebbw Vale:—

Geo. A. Brown (Builders), Ltd., Ebbw Vale	£322,026
*Horn Construction Co., Ltd., Finsbury Pavement House, Moorgate, London, E.C.2 (after reductions)	272,169
F. Hann & Sons, Ebbw Vale (group B only)	159,816

Edinburgh.—Erection of 184 houses at the North Cherniston housing site. John A. Grant (F.), architect, 36, Mitchell-st., Edinburgh. R. T. B. Gilray, FRICS, quantity surveyor, 30, Castle-st., Edinburgh: *Modern Homes (Edinburgh), Ltd., Edinburgh.

Eton.—24 houses and eight flats at Meux Field housing site, Eton Wick, for U.D.C. E. & S.: *J. Taylor, 28, St. Hilda's-ave., Ashford, Middlesex, £42,132.

Fifeshire.—New housing scheme to be erected at the Cemetery-rd. housing site. Peter Sutherland, architect, 306, Wellesley-rd., Methil, Fife. Excavation, brick, building and allied works: *W. C. Forrester & Son, Ltd., Leven, £10,174; plumbing, sanitary engineering and allied works: *Thomas Stewart & Son, Ltd., Methil, £2,704; joinery, carpentry and allied works: *David Dewar, Methil, £7,750; plaster, lathing and allied works: *Peter Kelly & Sons, Ltd., Edinburgh, £2,229. (Other contracts let.)

Gateshead.—Construction of foundry in Hawks-rd., for E. N. Mackley & Co., Ltd. Architect, C. S. Errington, 46, Grainger-st., Newcastle-on-Tyne: *Wilson (Engineers, Newcastle), Ltd., Dean-st., Newcastle-on-Tyne.

Glasgow.—Extensions to the works of the Scottish Machine Tool Corporation, Ltd., at Drumoyne-rd., Govan: *The Glasgow Steel Roofing Co., Ltd., 343, Balmore-rd., Saracen-st., Possilpark, Glasgow.

Glasgow.—Plans in hand for new buildings to be erected at Balmore-rd. and Lomond-st., Possilpark: L. K. MacKenzie & Partners, Ltd., 204, Cathedral-st., Townhead, Glasgow.

Huyton-with-Roby.—Erection of St. Dominic's R.C. sec. sch.: *C. J. Doyle & Son, Ltd., Liverpool, £150,538.

Ilkeston.—Further 50 houses at Kirk Hallam estate, for B.C.: *F. Sisson & Sons, Ltd., 32, Cromford-rd., Langley Mill, £64,708.

Inverness-shire.—Erection of 66 houses for C.C. at Portree, Isle of Skye. Alexander Cullen (F.), architect, Municipal-chbrs., The Castle, Inverness: *Arnott, MacLeod & Co., Ltd., Edinburgh.

Kensington.—Erection of 15 flats on the sites of 74-82, Silchester-rd., 11, Aldham-rd., and 1-4, Walmer-mews: *R. Mansell, Ltd., £29,836 (after reductions).

Kensington.—Erection of nine flats, Ladbroke-grove, for B.C.: *Leslie & Co., Ltd., £19,184.

Kiveton Park.—28 houses at North Anston, for R.D.C.: *C. H. Mirfin, £32,822: *Dernie & Bell, Worksop, £285,490 (236). 88 at St. Johns with Throatham: *E. A. & H. A. Tomlinson, £111,006; *E. Bett & Son, Ltd., £55,406 (44); *Earle & Probert, Ltd., £36,980 (30); *Morris Oldfield & Co., Ltd., £22,281 (18).

Liskeard.—12 houses and site works at Henheniot, for R.D.C. Higman & Ford, architects, The Parade:—

A. Long, Auburndale, Torpoint	£23,139
Kerswill & Son, Taylor-sq., Tavistock ...	21,369
*E. Pearce, Westnorth, Sandplace-rd., Looe, Cornwall	18,489

Liverpool.—Erection of Croxteth sec. sch., for E.C.: *Henry Boot & Sons, Ltd., Heysham-rd., Liverpool, £127,268.

Liverpool.—Adaptations Phase 1 at Park Hospital, for Reg. Hospital Brd.: *F. C. Bloomfield & Co., Ltd., 71, Almonds-green, Liverpool, £17,691. Alterations to operating theatre at Aintree Hospital: *J. Lucas & Sons (Builders), Ltd., Prescot, £10,504. Alterations to Ward 17 at Rainhill Hospital: *Brook Construction Co. (Liverpool), Ltd., 3, Blake-st., Liverpool, £4,169.

Liverpool.—16 flats, eight houses, 12 shops and 20 garages, Speke estate, for T.C.: *Unit Construction Co., Ltd., Liverpool, £74,000.

Liverpool.—Erection of a new factory at Kirkby, Liverpool, for Tubewrights, Ltd. The architects are Sir Alfred Shennan & Partners, North House, 17, North John-st., Liverpool 2. The consulting engineer, T. Bedford: *Taylor Woodrow Construction, Ltd.

L.C.C.—Foundations and certain site works for the extension to Holloway cty. sec. sch., Islington North:—

E. H. Smith (Croydon), Ltd., Croydon ...	£28,683
Stewart & Partners, Ltd., St. Marylebone ...	26,928
J. Jarvis & Sons, Ltd., Westminster	26,213
C. P. Roberts & Co., Ltd., Holborn	25,557
Lavender, McMillan, Ltd., Worcester Park	25,510
G. E. Wallis & Sons, Ltd., Westminster ...	24,716
Patman & Fotheringham, Ltd., Islington ...	24,611
J. Garrett & Son, Ltd., Balham	24,123
Wilson Lovatt & Sons, Ltd., Westminster...	23,779
*F. R. Hipperson & Son, Ltd., Dagenham...	23,729

The architect's comparable estimate is £22,967.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended March 14.

Building work: Taylor Woodrow Construction, Ltd., Southall, Middlesex; Fred Pearson & Co., Ltd., Doncaster. *General maintenance work*: Willcocks & Stephens, Ltd., Paignton, Devon; A. Monk & Co., Ltd., Warrington, Lancs; R. Corben & Son, Ltd., Dover, Kent; C.A.S. (Contractors), Ltd., London, S.W.10; Kerridge (Cambridge), Ltd., Cambridge. *Agricultural maintenance*: E. S. Walley & Co., Ltd., Warrington, Lancs.

London (British Railways).—The following contract has been placed by the Eastern Region of British Railways:—

Repairs to, and reconstruction of, engine shed roof, Lowestoft motive power depot: *George Simpson (London), Ltd., 53, Ebury-st., S.W.1.

London (Metropolitan Police).—Contracts placed by Metropolitan Police:—

Extension and alterations at Beak-st. Section House: *Aplctree & Son, £1,168. Erection of six flats at Grosvenor-ave., Islington: *R. F. Peachey & Sons, Ltd., £16,099. Erection of nine flats at Penn-rd., Islington: *R. F. Peachey & Sons, Ltd., £19,672.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended February 28:—

London: Royal Courts of Justice, W.C.2, Alterations to form new boiler-house, Galbraith Bros., Ltd., 61, Bartholomew-cl., E.C.1. *Gloucestershire*: A.T.E., Barnwood, Erection of extension, William T. Nicholls, Ltd., St. Paul's-rd., Gloucester. *Middlesex*: St. Mary's Old Manuel T.E., Ealing Green, Ealing, Restoration and alterations, E. Gostling (Builders), Ltd., 81-95, Whitton-rd., Twickenham, Middlesex. *Warwickshire*: P.O. Sorting Office, Stratford-rd., Shirley, Birmingham, Erection of premises, W. J. Whittall & Son, Ltd., 132, Lancaster-st., Birmingham. *London*: Coronation, 1953, Public address system to procession route, Tonnay Products, Ltd. (Gipsy Hill), Northwood-rd., S.E.19.

¶London (War Dept.).—Contracts placed by W.D. during week ended March 7:—

Yorkshire: Painting and decorating, Alfred Bagnall & Sons, Ltd., Shipley; Roof repairs, F. Shepherd & Son, Ltd., Richmond. *Leicestershire*: Building work, G. Duxbury & Sons, Leicester. *Glamorganshire*: Building work, T. E. Evans & Co. Cardiff), Ltd., Cardiff. *Essex*: Building work, Percy Bilton, Ltd., London, W.1.

Surrey: Painting, J. Hood, Caldicot. *Hampshire*: Miscellaneous, Henry Jones & Son (Portsmouth), Ltd., Southsea. *Wiltshire*: Road repairs, Road Reconstruction (1954), Ltd., Frome; Road repairs, Mendip Stone & Concrete Co., Ltd., Frome.

Maidenhead.—New Methodist Church at St. Mark's-cres., Maidenhead, for the trustees. J. Stirling Boyd, LRIBA, architect, 84, Hill-cres., Bexley, Kent: *Prefabricated Constructions, Ltd., 28, Pont-st., S.W.1.

Manchester.—Alterations at Albany-rd. depot to provide garage accommodation, for T.C.: *Direct Labour.

Manchester.—Houses for T.C. 171 at Langley estate: *A. Locke (1940), Ltd., 166, Lostock-rd., Davyhulme, 152: *Marsden & Chapman, Ltd., 144, Seamons-rd., Altrincham, 11, Peel Hall-rd.: *Direct Labour. Flats at Blackley estate: *G. Wimpey & Co., Ltd., 629, Eccles New-rd. (156); *Direct Labour (126). 45, Peel Hall-rd.: *Direct Labour.

Mynyddislwyn.—74 houses, Llwynon estate, Oakdale, for U.D.C. S. T. Monte, AMICE, AMIStructE, E. & S., Council Offices:—

F. Hann & Son, Ebbw Vale	£124,411
W. Miles & Sons, Ebbw Vale	106,992
G. Albert Brown (Builders), Ltd., Ebbw Vale	98,900
*G. Gittins & Sons, Hengoed, Glam ...	96,837

Newcastle.—Alterations and improvements to Co-operative premises, 708-11, West-rd., Newcastle: *Newcastle Co-operative Society Works Dept., Claremont-rd., Newcastle-on-Tyne.

Newcastle-on-Tyne.—Conversion of Eshbank and adjoining property at Newcastle-on-Tyne, into a residential home for about 50 old people. Plans by the City A.: *Peter Edwards, Causey-st., Gosforth, Newcastle.

Newport (I. of W.) B.C.—20 houses, Pan estate. Frederick Rath, AMICE, MIMunE, B.E. & S., 39, Quay-st. *A. E. Jukes & Son, Ltd., Newport, I. of W. (20), £31,486.

Peterborough Joint Educ. Bd.—New premises for Wittering C.E. (controlled voluntary) sch. Ruddle & Wilkinson, FLA.RIBA, Long Causeway-chbrs., Peterborough:—

T. Lowe & Sons, Burton-on-Trent	£30,961
Bradshaw Bros., Leicester	30,797
F. G. Minter, Ltd., London, S.W.1	29,463
Brick & Co., Stamford	28,882
*B. Stokeley & Sons, Rosegarden, Eastfield, Peterborough	26,500

Ploughley.—10 houses at Launton, for R.D.C. J. W. Martin, AIAS, E. & S., Waverley House, Bicester. Quantities by H. J. Ridge, FRICS, Oxford: *F. J. Mitchell, Ltd., Aylesbury, £15,000.

Rawtenstall.—Seven houses, Taylor-ave., Edgeside estate, for B.C.: *D. L. Grimshaw & Co., Rawtenstall, £8,453.

Ripon (Yorks).—Erection of 121 houses in Lead-la. for City C.: ‡C. Cammidge & Son, Ltd., Vine House, Skipsea, nr. Driffield, Yorkshire.

Rotherham.—Houses on the Kimberworth Park estate, for B.C.: *O. Weaver & Sons, Ltd., Harlington-rd., Mexborough, £151,682 (120); *C. Earnshaw (Rotherham), Ltd., 35, Coke-la., Rotherham, £63,100 (54); *Beeden, Ltd., Thryberg, £52,296 (44); *Cooper & Kimber, Wood-la., Wickerley, £23,763 (20).

St. Pancras.—Erection of 46 flats, shops and basement car park on the Judd-st. housing scheme, for B.C.:—

Richard Costain, Ltd.	£157,439
Trollope & Colls, Ltd.	156,144
Holloway Bros. (London), Ltd.	154,079
Humphreys, Ltd.	153,291
F. G. Minter, Ltd.	152,079
‡Gee, Walker & Slater, Ltd.	147,704

Scunthorpe.—Erection of 3m. gallon reservoir at Stonewall Plantation, near Scunthorpe: *Quibell & Hardy, Ltd., Scunthorpe, £42,850.

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Smethwick.—Erection of George Betts jun. sch., for E.C.: *B. Whitehouse Sons, Ltd., 247, Monument-rd., Birmingham, £31,851.

Southgate.—Garage to accommodate 22 vehicles at the Refuse Disposal Works, Southgate, for B.C. Architect is J. T. W. Peat, E. & S., Town Hall, Palmers Green: *Prefabricated Constructions, Ltd., 28, Pont-st., S.W.1.

Stanley.—Erection of 102 houses, for U.D.C.: *Tarslag, Ltd., Stockton-on-Tees, £157,222.

Sunderland.—Erection of 46 houses on the Castletown estate, for T.C. Boro' A., H. C. Bishop, Grange House, Stockton-rd., Sunderland: *R. G. Finlay, Ltd., Ryhope, Sunderland, £61,180.

Tynemouth.—Alterations to Tynemouth Galaland, to provide buffet, lounge, supper room and little theatre. Architect, William Stockdale, 73, Howard-st., North Shields: *Direct Labour.

***Wallasey.**—Birket prim. sch. W. P. Clayton, ARIBA, Boro' A., Town Hall. Dep. £2 2s. *G. and J. Seddon, Ltd., 3, Manchester-rd. West, Little Hulton, Walkden, Manchester.

Wallsend.—Erection of 14 houses in Denbigh-ave., for T.C.: *J. H. James, Archer-st., Wallsend.

Walsall.—Dwellings at Gypsy-la. estate, for B.C. 132 flats: *Sir Alfred McAlpine & Son, Ltd., Waterloo-rd., Wolverhampton, £144,540; 98 houses: *United Construction (Walsall), Ltd., 54, Green-la., Walsall, £134,670; 40 houses: *Austin & Co., Aldridge, £54,993.

Wednesfield.—124 dwellings on Long Knowle housing site, for U.D.C. T. Peacock, E. & S., Pennhurst, 29, Bolton-rd. Quantities by Henry Vale & Sons: *Bishop Burns & Co., 28, Benson-ave., Goldthorn Park, Wolverhampton.

Worcs.—Erection of Franche cty. prim. sch., Kidderminster, for E.C.: *A. H. Guest & Son, Ltd., Stourbridge, £39,893.

Sewage Treatment

The Council for Codes of Practice for Buildings has issued as a draft for comment, Code 302.100, "Small Sewage Treatment Works," prepared for the Council by a committee convened by the Institution of Municipal Engineers. This Code describes suitable methods of treatment for the sewage from groups of houses, institutions, etc., with populations of about 350 and under, where connections to a public sewer are impossible. The Code is in draft form and subject to amendment in the light of comments received, which should be submitted to the Council by April 21. Copies may be obtained from the British Standards Institution, 24-28, Victoria-street, SW1, price 5s., reference CP (B) 1113.

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